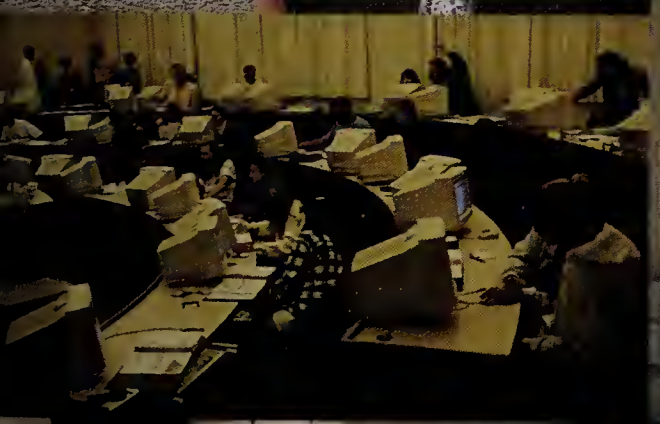
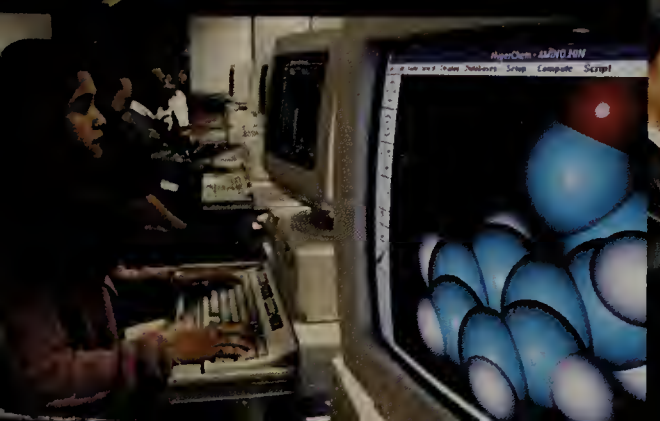
Undergraduate Bulletin

1997–98

Santa Clara University





For information: 408-554-5251

Santa Clara University reserves the right to make program, regulation, and fee changes at any time without prior notice. The University strives to assure the accuracy of the information in this bulletin at the time of publication. However, certain statements contained in this bulletin may change or need correction.

Nondiscrimination Policy

Santa Clara University does not discriminate on the basis of race, color, national and/or ethnic origin, sex, marital status, sexual orientation, disability, religion, veteran's status, or age in the administration of any of its educational policies, admissions policies, scholarship and loan programs, athletics, or employment-related policies, programs, and activities; or other University-administered policies, programs, and activities.

Inquiries regarding equal opportunity policies, the filing of grievances, or requests for a copy of the grievance procedures covering discrimination and harassment complaints should be directed to:

Conchita Franco Serri, Director
Office of Affirmative Action
SCU Title IX (gender), ADEA (age), and ADA (disability) Compliance Officer
Walsh Administration Bldg.
Santa Clara, CA 95053
408-554-4113 or 408-554-4178

Copies of these policies and procedures are also available from the Human Resources Department (408-554-4392).

SANTA CLARA UNIVERSITY

Undergraduate Courses and Degrees 1997–98 Bulletin

Santa Clara, California 95053

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Academic Calendar 1997–98

FALL QUARTER 1997

May 19–30	Monday–Friday	Registration period, fall 1997
September 20–21	Saturday–Sunday	New-student orientation
September 22	Monday	Classes begin
September 22–26	Monday–Friday	Late registration/add period
September 26	Friday	Last day to declare P/NP grading option
October 7	Tuesday	Senior planning day; classes suspended. Other activities will take place.
October 10	Friday	Last day to submit incomplete spring quarter and summer session 1997 work to professors
October 17	Friday	Last day to petition for degrees to be conferred in December 1997
October 17	Friday	Last day to withdraw from classes without a W grade
October 17	Friday	Last day to remove spring quarter 1997 incompletes (faculty)
October 20	Monday	University planning day; classes cancelled
November 17–25	Monday–Tuesday	Winter registration period
November 21	Friday	Last day to withdraw from classes
November 26	Wednesday	Academic holiday
November 27, 28	Thursday, Friday	Thanksgiving recess; academic and administrative holidays
December 5	Friday	Classes end
December 8–12	Monday–Friday	Fall quarter examinations
December 17	Wednesday	Fall quarter grades due (faculty)
December 24, 25	Wednesday, Thursday	Christmas recess; administrative holidays
December 31, January 1	Wednesday, Thursday	New Year's recess; administrative holidays

WINTER QUARTER 1998

November 17–25	Monday–Tuesday	Winter registration period
January 4	Sunday	New-student orientation/ registration

January 5	Monday	Classes begin
January 5–9	Monday–Friday	Late registration/add period
January 9	Friday	Last day to declare P/NP grading option
January 19	Monday	Martin Luther King Day; academic and administrative holiday
January 23	Friday	Last day to submit incomplete fall quarter 1997 work to professors
January 23	Friday	Last day to petition for degrees to be conferred in March 1998
January 30	Friday	Last day to remove fall quarter 1997 incompletes (faculty)
January 30	Friday	Last day to withdraw from classes without a W grade
February 16	Monday	Presidents Day; academic and administrative holiday
February 17–27	Tuesday–Friday	Spring registration period
February 20	Friday	Last day to petition for degrees to be conferred in June 1998
March 6	Friday	Last day to withdraw from classes
March 13	Friday	Classes end
March 16–20	Monday–Friday	Winter quarter examinations
March 25	Wednesday	Winter quarter grades due (faculty)

SPRING QUARTER 1998

February 17–27	Tuesday–Friday	Spring registration period
March 29	Sunday	New-student orientation/ registration
March 30	Monday	Classes begin
March 30–April 3	Monday–Friday	Late registration/add period
April 3	Friday	Last day to declare P/NP grading option
April 10	Friday	Good Friday; academic and administrative holiday
April 17	Friday	Last day to submit incomplete winter quarter 1998 work to professors
April 24	Friday	Last day to petition for degrees to be conferred in September 1998

April 24	Friday	Last day to remove winter quarter 1998 incompletes (faculty)
April 24	Friday	Last day to withdraw from classes without a W grade
May 18–29	Monday–Friday	Fall 1998 registration period
May 25	Monday	Memorial Day; academic and administrative holiday
May 29	Friday	Last day to withdraw from classes
June 5	Friday	Classes end
June 8–11	Monday–Thursday	Spring quarter examinations
June 13	Saturday	147th commencement
June 16	Tuesday	Spring quarter grades due (faculty)

SUMMER SESSION 1998*

Session I

April 20–May 29	Monday–Friday	Summer advance registration period
June 1–17	Monday–Wednesday	Walk-in registration
June 18	Thursday	Classes begin
June 18–22	Thursday–Monday	Late registration/add period
June 22	Monday	Last day to declare P/NP grading option
July 2	Thursday	Last day to withdraw from classes without a W grade
July 3	Friday	Independence Day; academic and administrative holiday
July 17	Friday	Last day to withdraw from classes
July 22	Wednesday	Classes end
July 23–24	Thursday–Friday	Summer Session I examinations
July 29	Wednesday	Summer Session I grades due (faculty)

**See* Undergraduate Schedule of Classes/Summer *for Session III and IV dates.*

Session II

April 20–May 29	Monday–Friday	Summer advance registration period
June 1–17	Monday–Wednesday	Walk-in registration
June 18–July 29	Thursday–Wednesday	Late registration/add period
July 27	Monday	Classes begin
July 29	Wednesday	Last day to declare P/NP grading option
August 10	Monday	Last day to withdraw from classes without a W grade
August 21	Friday	Last day to withdraw from classes
August 28	Friday	Classes end
August 31–September 1	Monday–Tuesday	Summer Session II examinations
September 7	Monday	Labor Day; academic and administrative holiday
September 8	Tuesday	Summer Session II grades due (faculty)

All dates are inclusive.
Registration dates are subject to change.

1

Santa Clara University

STATEMENT OF PURPOSE

Inspired by the love of God to serve society through education, continuing the commitment of the Franciscans who founded Mission Santa Clara in 1777 and the Jesuits who opened the College in 1851, Santa Clara University declares its purpose to be the education of the whole person within the Catholic and Jesuit tradition.

The University is thus dedicated to

- the preparation of students to assume leadership roles in society through an education that stresses moral and spiritual as well as intellectual and aesthetic values, seeks to answer not only "what is" but "what should be," and encourages faith and the promotion of justice;
- an uncompromising standard of academic excellence and an unwavering commitment to academic freedom, freedom of inquiry, and freedom of expression in the search for truth;
- rigorous and imaginative scholarship; excellent teaching in and out of the classroom; and educational programs designed to provide breadth and depth, to encourage the integration of different forms of knowledge, and to stimulate not only the acquisition but also the creative and humane use of knowledge;
- affirmation of its Catholic identity, respect for other religious and philosophical traditions, promotion of dialogue between faith and contemporary culture, opposition to narrow indoctrination or proselytizing, and the opportunity for worship and the deepening of religious belief;
- a community enriched by men and women of diverse backgrounds, respectful of difference and enlivened by open dialogue, caring and just toward others, and committed to broad participation in achieving the common good.

Board of Trustees
Santa Clara University
Oct. 22, 1993

HISTORICAL PERSPECTIVE

On Jan. 12, 1777, six months after the signing of the Declaration of Independence, a cross was planted at a site in the present city of Santa Clara by a Spanish Franciscan missionary, Tomás de la Peña, to mark the founding of the eighth of California's original 21 missions, Santa Clara de Asís.

Three-quarters of a century elapsed before Santa Clara University, or Santa Clara College as it was known, opened its doors as an institution of higher learning. In the intervening years, however, the mission served as a spiritual center and school for the Indians. Besides religious instruction, the men were taught stock-raising, farming, and the building trades; the women, weaving and sewing; the children, reading, music, and religious drama. From 1777 until Mexican government secularization on Feb. 27, 1837, some 9,000 persons were baptized at the mission.

During the early period, the less solidly built mission buildings of the first and second sites were destroyed by the flooding waters of the Rio Guadalupe. The third mission church, constructed of adobe, was completed in 1784 but was seriously damaged by earthquakes in 1812 and 1818. A fourth church, also adobe, was used temporarily from 1819 to 1825. The larger, fifth adobe mission, with its quadrangle patio, was completed and dedicated Aug. 12, 1825. The University's Adobe Lodge Faculty Club is all that remains of the west wing of that quadrangle.

The first site of Mission Santa Clara is marked by a California state historical landmark located near the intersection of Kifer Road and De La Cruz Boulevard. Crosses mark the second site at De La Cruz Boulevard and Martin Street and the third site at Campbell and Franklin streets. The temporary fourth mission church stood between what are now Kenna Hall and the Walsh Administration Building.

During the first three decades of the 19th century, the old mission enjoyed its most fruitful years. In 1827, more than 1,400 Indians lived within sound of the mission's bells. In that year, some 15,000 sheep, 14,500 head of cattle, and abundant crops of wheat, corn, and beans were produced and cared for by the Indians under the guidance of the missionaries.

A combination of factors terminated the decades of prosperity at Santa Clara and the other California missions. The Mexican War of Independence brought turmoil from 1810 to 1821 and resulted in a decrease in Franciscan personnel and donations-in-aid from benefactors. The new Mexican government took possession of the old Jesuit Pious Fund of the Californias that had been the main source of support for the mission. Most of the Indians' lands, cattle, and sheep became the object of spoliation by civil administrators.

In 1827 and again in 1829, governmental decrees ordered exile for all Spaniards who refused allegiance to the new regime. Since most of the mission padres were from Spain, many chose banishment. Some, however, remained until 1833, when Mexican Franciscan replacements arrived from the missionary college of Zacatecas. Among them was Fray Francisco García Diego y Moreno, who was to become the first bishop of the Californias. Although committed to the welfare of the Indians, the padres' resistance to governmental encroachment on the Indians' rights and property had little effect. Full secularization of mission properties was finally imposed at Mission Santa Clara in early 1837. This action ended

the effectiveness of the Franciscan missionary endeavor in Alta California. Within a few years, most of the mission buildings and the Indian lands, cattle, and sheep were seized by civil officials and other claimants. In the early 1840s, foreigners began arriving in Alta California in increasing numbers. Some of the immigrants were Anglo-Americans attracted by the rich agricultural lands of the Santa Clara Valley.

Events during 1848 dramatically altered the course of history at Santa Clara. In February, the United States and Mexico signed the Treaty of Guadalupe Hidalgo, which concluded the two-year war in which they had been engaged and ceded California to the United States. That same year gold was discovered in the Sierra Nevada, thus attracting a flood of newcomers into the former Mexican province.

It was in this setting that Santa Clara opened its classroom doors in May 1851. The new bishop of San Francisco, Joseph Sadoc Alemany, asked Jesuits Michael Accolti and John Nobili, formerly Oregon missionaries, to open a college at Mission Santa Clara. During its first academic year, 1851–52, Father Nobili and a handful of Jesuit and lay teachers offered instruction in a variety of subjects to approximately 40 students. A decision made in 1854 by the Jesuit Province of Turin, Italy, to adopt California as a permanent mission field marked a turning point in Santa Clara's history. As a consequence, the Jesuits of Turin provided the college with the faculty and support that it needed to grow. The following year, Santa Clara College received a charter of incorporation from the state of California.* In 1857, the college conferred its first collegiate degree, a Bachelor of Arts diploma, on Thomas I. Bergin. This was the first diploma granted by any institution of higher learning in the state of California. By 1858, new scientific apparatus arrived from Paris, and integrated courses in science as well as in the classics and in commercial subjects were offered.

Slow and steady growth followed, and distinguished graduates became prominent members of California life. It was not until 1912, however, that the Schools of Law and Engineering were founded. In that same year, courses in the humanities and the sciences were expanded, and the college became Santa Clara University. Meeting the demands of urban growth in the Santa Clara Valley, courses in commerce and finance were also expanded in 1926, and the University's School of Business and Administration began. In that same year, the old mission church was destroyed by fire. The present structure, an enlarged replica of the original, was completed in 1928.

From the 1930s through World War II, the University's enrollment was relatively stable. The return of many veterans resulted in an enlarged student body and new resources. In 1947, for the first time in the University's history, enrollment broke the 1,000 mark. From the postwar period to the present, the face of the campus has been changing and expanding. In 1961, the University announced a major change in policy and accepted women as undergraduate students for the first time in its 110-year history. Santa Clara became the first Catholic coeduca-

*THE UNIVERSITY'S LEGAL NAME is *The President and Board of Trustees of Santa Clara College* to which should be added, *A Corporation, located at Santa Clara, California.* For the information of individual, corporation, and foundation donors who wish the tax benefits of their gifts and grants, the University is classified by the Internal Revenue Service as a 501 (c) (3) (ii) tax-exempt organization and it is not classified as a private foundation under section 509 (a) of the IRS Code.

tional institution of higher learning in California. Thanks to the generous support of many friends, 23 new buildings have been added to match the growth in enrollments. The Louis B. Mayer Theatre, Leavey Activities Center, and Cowell Health Center were completed in the early 1970s. Additions in the 1980s included a computer center, engineering and computer laboratories, parking facilities, and student housing. The already scenic campus was significantly enhanced in 1989 by rerouting The Alameda, California's oldest north-south highway, around the University. With the new entrance road and landscaping, the reroute unifies the Mission and modern sections of the campus into 104 contiguous acres.

Although the student body has grown rapidly in the past decade, it has been held relatively small: 4,019 undergraduates and 3,706 graduate and law students. Since 1960, educational opportunities at all levels have increased.

As an independent University supported by tuition and gifts, Santa Clara has been able to accomplish change in ways that reflect its traditional concern for the individual student.

Today, Santa Clara University, the first institution to offer classes in higher learning on the West Coast, continues its mission heritage of service by helping its students equip themselves with advanced knowledge and humanistic values. Academic excellence in a well-balanced human being is the University's goal.

CAMPUS LOCATION

Santa Clara University is 46 miles from San Francisco, near the southern tip of the San Francisco Bay, in an area rich in opportunities for learning. The campus is situated in the midst of one of the nation's great concentrations of high-technology industry (Silicon Valley) and professional and scientific activity. Many nearby firms and social agencies are world leaders in the search for solutions to humanity's most critical problems. The cultural and entertainment centers of San Francisco, Berkeley, Oakland, and Marin County are within one-hour's travel by bus, train, or car. In the opposite direction, the Pacific beaches of Santa Cruz are about 30 minutes away; the world-famous Monterey Peninsula and Carmel are two hours away.

The University is accessible by major airlines via San Jose International Airport, which is three miles from campus, and San Francisco and Oakland International airports.

Santa Clara has a moderate Mediterranean climate. During a 67-year period, the average maximum temperature was 71.4 degrees Fahrenheit and the average minimum, 41.6 degrees. The sun shines an average of 293 days per year, and the average annual rainfall is about 15 inches.

ACADEMIC ORGANIZATION

The University is organized into five academic units.

The College of Arts and Sciences comprises 18 departments and offers 29 majors leading to either the Bachelor of Arts or the Bachelor of Science degree. The College also provides the liberal arts curriculum to all undergraduate students in the University.

The Thomas and Dorothy Leavey School of Business and Administration offers a professional education in both undergraduate and graduate programs. The Executive Development Center, an integral part of the school, offers nondegree seminars, lectures, and programs for professional managers and executives. The graduate programs are described in *Leavey School of Business and Administration Graduate Programs.*

The School of Engineering offers a technical education in both undergraduate and graduate programs. The graduate programs are described in *School of Engineering Graduate Programs.*

The School of Law offers a full range of courses in federal, state, and international law that leads to the J.D. degree. The *School of Law Bulletin* describes its programs.

The Division of Counseling Psychology and Education offers programs in various areas of counseling and education. *Division of Counseling Psychology and Education Graduate Programs* describes its programs.

The Pastoral Ministries Program prepares women and men to enter into professional ministry in the church by offering Master of Arts degrees in four areas. The *Pastoral Ministries Graduate Program* describes its programs.

ACADEMIC TERMS

The academic year (September to June) is divided into three 11-week terms. The 11th week is devoted to examinations. Most undergraduate courses in the College of Arts and Sciences and the Leavey School of Business and Administration carry 4 or 5 units of academic credit and students typically enroll in four courses per quarter. During some quarters of their junior and senior years, students may enroll in three courses. In the School of Engineering, course values range from 3 to 5 units each; consequently, the number of courses taken varies. Most classes are scheduled on Monday, Wednesday, and Friday with 65 minutes per class period or Tuesday and Thursday with 105-minute class meetings. Science and engineering labs are scheduled in the afternoons and on Tuesday and Thursday mornings.

SUMMER SESSION

The summer session offers day and evening courses for college credit. Undergraduate courses are offered in a number of academic disciplines. No transcript is required for admission, but all applicants must be in good academic standing. Room and board are available on campus at reasonable rates.

Graduate courses are also offered in the Leavey School of Business and Administration, the School of Engineering, the School of Law, the Division of Counseling Psychology and Education, and the College of Arts and Sciences in the Department of Mathematics and the Department of Religious Studies. Course information may be obtained from the individual schools.

2

Admissions

ADMISSION TO FRESHMAN STANDING

Criteria

The University makes selective decisions regarding applicants for admission based on the following criteria: first, high school record; second, scores on College Entrance Examination Board tests; third, school recommendations; fourth, personal factors such as extracurricular involvement, character, leadership, and one personal essay; fifth, relationship to the University.

Admission to freshman standing at Santa Clara depends on a continued high level of performance during the remainder of the applicant's senior year in high school and on receipt of a high school diploma. If a significant change occurs in academic work during this year, the Committee on Admissions will re-evaluate the acceptance in light of that change.

Recommended Courses

The following high school courses are recommended for a student applying for admission to the University as a freshman:

	Number of Yearlong Courses		
Course	*Liberal Arts Majors*	*Business and Social Science Majors*	*Natural Science, Mathematics, and Engineering Majors*
Algebra	2	2	2
English	4	4	4
History	1	1	1
Foreign language (one)	3	3	3
Plane geometry	1	1	1
Laboratory science (upper division)	1	1	2*
Trigonometry		1/2	1/2
Elective**	4	3 1/2	2 1/2

*Physics and chemistry are recommended laboratory sciences for natural science and engineering majors.

**Elective courses must be in advanced foreign languages, mathematics, laboratory science, or other solid college-preparatory courses.

Campus Visits

The University encourages all candidates to visit the campus, preferably when school is in session, so they can tour the campus with a student guide. Although interviews are not required, a member of the admissions staff will be happy to meet with candidates. Appointments should be made one to two weeks in advance.

Admissions Procedure

Prospective freshman students should

1. file the application and service fee of $40 with the Admissions Office (application forms may be obtained from that office);
2. submit a recommendation from a high school counselor, teacher, or administrator evaluating scholastic ability and character, to the Admissions Office (recommendation form is provided with application);
3. request the high school to forward a sixth-semester transcript to the Admissions Office. This transcript should also list the courses to be taken during the seventh and eighth semesters. *All students should also submit a seventh-semester transcript as soon as possible and preferably by Feb. 20, 1998.*
4. take the Scholastic Assessment Tests (SAT I)* no later than January of the senior year and request that scores be sent to the University (for information on dates and places of this test, write to the College Board, ATP, 1947 Center St., Berkeley, CA 94704, or Box 592, Princeton, NJ 08541);
5. make certain all of the above are completed and the required materials are submitted to the Admissions Office by Jan. 15 (full consideration cannot be assured for applications received after that date); and
6. mail application materials directly to the Admissions Office.

Sixth-Semester Decision

Students may seek an admissions decision after the sixth semester. Transcripts reflecting six semesters of work and recommendation forms should be sent by the high school. The admissions decision will be rendered beginning in December. If the Committee on Admissions requires additional academic information before reaching its final decision, the student will be so informed in a letter.

ADVANCED PLACEMENT

Santa Clara participates in the Advanced Placement Program to recognize college-level academic achievement prior to matriculation and to encourage students to pursue advanced studies in their areas of interest.

Credit or placement is determined on the recommendation of the appropriate department, which will review the student's scores and may also review the student's high school record, teacher evaluations, substantiation of independent studies, and transcripts from other colleges. Course credit is offered to students who qualify in subjects according to the schedule issued by the University registrar. Students will be notified of such credit on matriculation at Santa Clara.

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*The SAT I is preferred, but the American College Testing (ACT) exam is also accepted.

The following chart indicates the subject examination, required scores, and Santa Clara credit granted in the Advanced Placement Program.

ADVANCED PLACEMENT POLICY

Examination	*Score Required*	*Credit (qtr. units)*	*SCU Course Waived*
Art: History	4, 5	4.0	Departmental determination
Art: Studio drawing	4, 5	**	Departmental determination
Art: Studio general	4, 5	**	Departmental determination
Biology	4, 5	4.0	Departmental determination
Chemistry	4, 5	5.0	Chemistry 5
Comparative government and politics	4, 5	4.0	Political Science 2
Computer science A	4, 5	4.0	COEN 4 or OMIS 30 or 34 or Math 10
Computer science AB	3, 4	4.0	COEN 4 or OMIS 30 or 34 or Math 10
	5	8.0 or 4.0	COEN 4 or OMIS 30 or 34 or Math 10 and 61
Economics (macro)	4, 5	4.0	Economics 1
Economics (micro)	4, 5	4.0	Economics 2
English: Language and composition	4, 5	4.0	English 1
English: Literature and composition	4, 5	4.0	3rd English requirement for Arts and Sciences and Business students
European history	4, 5	4.0	History 13
French language	4, 5	4.0	French 21
French literature	4, 5	4.0	French 22
German language	4, 5	4.0	German 21
Latin: Catullus–Horace	4, 5	4.0	None
Latin: Vergil	4, 5	4.0	None
Math: Calculus AB	4, 5	8.0	Math 11 and 12 or Math 30 and 31
Math: Calculus BC	3	4.0	Math 11 or Math 30
	4, 5	12.0	Math 11/30, 12/31, and 13
Music: Listen/Literature	4, 5	4.0	Departmental determination
Music: Theory	4, 5	4.0	Departmental determination
Physics B	4, 5	4.0	Physics 20
Physics C: Mechanical	4, 5	5.0	Physics 4
Physics C: Electrical and magnetic	4, 5	**	Departmental determination
Psychology	4, 5	4.0	Psychology 11
Spanish language	4, 5	4.0	Spanish 21
Spanish literature	4, 5	4.0	Spanish 22

** Department determines the unit credit to be awarded and/or the course waived.

Examination	*Score Required*	*Credit (qtr. units)*	*SCU Course Waived*
U.S. government and politics	4, 5	4.0	Political Science 1
U.S. history	4, 5	4.0	History 7, 8, or 9

INTERNATIONAL BACCALAUREATE POLICY

Santa Clara University recognizes the International Baccalaureate (IB) Program for admission and placement purposes and often awards credit for grades of 5, 6, or 7 in the higher-level examinations. Final decisions, however, are made individually by the appropriate academic departments after consulting with the director of academic advising. No credit is awarded for subsidiary-level courses.

ADMISSION TO ADVANCED STANDING (TRANSFERS)

Each year the University accepts a number of transfer students, principally at the sophomore and junior levels. Since applications exceed the number of students who can be accommodated, no specific statement can be made about the quality of work (GPA) that will enable a transfer applicant to be accepted. Only students in good standing at the last college attended will be considered. No student on academic or disciplinary probation or suspension will be considered for admission.

Ordinarily, no minimum number of units is required for transfer admission. However, students who were not accepted as freshmen cannot be considered until they have completed at least 45 quarter units or 30 semester units of transferable college work. In general, students' class standing is determined by the number of units applicable to their degree program.

The Scholastic Assessment Tests of the College Entrance Examination Board are required of transfer applicants who have completed less than 45 quarter units or 30 semester units of transferable work. A high school transcript and transcripts from all colleges and universities attended are required of all applicants.

Transfer students may apply for admission for fall, winter, and spring quarters. Deadlines for applications to those terms are fall, May 15; winter, Oct. 15; spring, Jan. 15.

Transfer Credit

Transfer credit is determined by the dean of the College or School following the student's acceptance and submission of registration deposit. No evaluation will be made before that time. The following general statements apply to transfer credit:

- Santa Clara University awards a maximum of 88 quarter units of transfer credit to students who have completed, with a grade of C or better, courses taken at other accredited universities and colleges. Transfer credit will not be awarded for courses taken on a pass/no pass or credit/no credit basis. Students admitted to the School of Engineering may transfer a maximum of

one-half of their degree requirements. The academic levels of these courses must be essentially equivalent to those of similar courses offered at Santa Clara and typically exclude courses or credit gained from continuing education or from practica or internships (i.e., experiential learning).

- Work done at other institutions will not be used in calculating grade point averages or class rankings at Santa Clara, but will be considered when determining honors at graduation.
- Technical or trade courses and courses from regionally unaccredited institutions, trade schools, and extension or correspondence programs do not transfer.
- Santa Clara University does not grant credit for university or college courses that were completed to fulfill high school graduation requirements.
- Students who are already enrolled at Santa Clara University and who intend to take courses at other institutions should refer to the policy governing the transfer of units provided on Page 289. Students who are on academic leave from Santa Clara should consult with their dean and chair of their major department if they are considering enrolling in courses at other institutions. In this way, the selection of nontransferable courses can be avoided. Appropriate approval forms are available from the Student Records Office.

Recommended Courses for Transfers

Students applying for transfer to Santa Clara enhance their chances for admission by completing University Core and College requirements outlined under each undergraduate division of this bulletin. Preference will be given to students who have completed the following courses:

- College of Arts and Sciences: English composition (2 semesters or quarters); college-level mathematics (1 semester or quarter); natural science (1 semester or quarter)
- School of Business: English composition (2 semesters or quarters); calculus and analytic geometry (2 semesters or quarters); accounting (2 semesters or 3 quarters); microeconomics; macroeconomics
- School of Engineering: English composition (2 semesters or quarters); calculus (2 semesters or 3 quarters); chemistry (1 semester or 1 quarter); physics (2 semesters or 2 quarters)

ADMISSION OF FOREIGN-BORN STUDENTS

Foreign-born students must present a score in the Test of English as a Foreign Language (TOEFL), which is administered by the Educational Testing Service. The minimum acceptable TOEFL score is 550. Foreign-born students, both freshmen and advanced-standing applicants, must also take the Scholastic Assessment Tests of the College Entrance Examination Board. In order to be issued Immigration Form I-20, the applicant must be accepted as a full-time student working toward a degree.

ADMISSION OF PART-TIME STUDENTS

The University does not admit degree-seeking students on a part-time basis. Students wishing to take an individual course should contact Undergraduate Admissions for an application for nonmatriculants. Students eligible for admission may enroll but only on a space-available basis.

GRADUATION RATE

The Santa Clara University 1995–96 six-year graduation rate for the 1990 freshman class is 80.4 percent; the five-year rate for the 1991 freshman class is 77.2 percent; and the four-year rate for the 1992 freshman class is 70.2 percent.

3

Financial Information

EXPENSES: 1997–98

Application fee ..... **$ 40**
This nonrefundable charge is to be sent with each application form.

Deposits

All new students or students applying for readmission ..... **$ 400**
This amount is automatically credited to the student's account when paid and is not refundable.

Housing prepayment ..... **$ 250**
The $250 deposit must accompany the housing contract. The deposit is refundable on a prorated basis according to the schedule stipulated in the Student Housing Contract.

Tuition and fees, per quarter **$5,485**

Health Center fee, per quarter (all full-time students and SCU health plan participants)..... **$ 60**

Late payment fee..... **$ 50**

Incremental tuition (per course) ..... **$ 113**
For students taking engineering courses

Part-time tuition

One (1) term course **$1,850**
Two (2) term courses (lower-division students) **$3,421**
Two (2) term courses (upper-division students) **$5,485**
Upper-division students enrolled for at least two (2) courses, regardless of the unit value of the courses, are considered full-time students for tuition purposes and will be charged full-time tuition.

Room and Dining Plan, per quarter **$2,342**
The amount stated above is for the resident dining plan with a value of $860 and the standard residence-hall (two persons per room) rate of $1,482. The residence-hall room rate includes an $8 per quarter Residence Hall Association fee as well as access to the data networking, cable TV, and monthly telephone service. Long distance telephone service is billed separately. Please note that any other housing arrangement will result in a different rate than stated above. Charges during winter and spring recess are by arrangement with the director of Housing and Residence Life.

Note: Tuition and room and board are due and payable in full no later than the announced financial clearance deadline.

Special Information A full-time student who drops courses after the last day to add classes will be considered full-time for the balance of that term for tuition purposes.

Part-time Students For tuition purposes, a part-time student is defined as a lower-division student taking fewer than three (3) term courses or an upper-division student taking fewer than two (2) courses, regardless of the unit value of the course. For financial aid purposes, 6 units is the minimum number of units to be considered enrolled at least half time.

Fees

Co-op administrative fee (in addition to tuition)	**$250**
Fee for challenging a course (per course)	**$ 50**
Audit fee (per course)	**$250**
Late registration fee (during add/drop period)	**$ 30**
Residence hall contract cancellation fee	**$250**
Late submission of form fee (administrative forms, e.g., application for degrees, etc., per day; $50 maximum)	**$ 2**
Replacement for lost ACCESS card	**$ 15**
Replacement for damaged ACCESS card	**$ 5**
Deferment service fee	**$ 50**
Returned check fee	**$ 15**
Studies Abroad application fee (nonrefundable)	**$ 30**
Studies Abroad administrative fee (per semester)	**$500**
Studies Abroad administrative fee (per year)	**$800**
Academic transcript fee (per copy)	**$ 3**
Academic transcript fee (rush process)	**$ 8**
New freshman student orientation fee	**$120**
New transfer student orientation fee	**$ 85**

Note: For graduate programs in Business and Administration, Religious Studies, Counseling Psychology and Education, Engineering, and Law and summer session tuition and fees, see announcements of the various graduate programs and summer sessions.

Mandatory Health Insurance All undergraduate students with 6 or more units and all international students are required to show proof of health insurance coverage to waive purchase of the Santa Clara University–sponsored health insurance plan. Students who do not provide such proof will be assessed the annual fee.

Annual student health insurance fee	**$557**
Annual international-student health insurance fee	**$557**

Registration Cancellation Fee If a student, after registering, withdraws anytime prior to the first scheduled day of classes and before attending any classes, the full refund is subject to a $50 registration cancellation fee.

Art Courses A materials fee will be charged for some art courses. The fee varies per course.

Biology Laboratory Courses A $45 fee will be charged for each lab course to cover the cost of supplies.

Chemistry Laboratory Courses A $45 fee for each lab course will be charged. In addition, any breakage charges will be assessed at the completion of each course.

Communication Courses A fee will be charged for television-production courses and a few others that require materials and supplies (other than textbooks). The fee varies per course.

School of Business and College of Arts and Sciences Computer Courses A $30 fee will be charged for courses that require intensive computer use.

Music Courses A $20 fee is charged for most courses. The applied lesson fee is $360 for one hour of instruction with an SCU faculty member. Half-hour applied lessons are available for a fee of $180, with permission of instructor only.

Physics Laboratory Courses A $20 fee will be charged for each lab course.

Psychology Laboratory Courses A $40 fee will be charged for select lab courses.

Parking Permits Permits may be purchased daily between 8 a.m. and 5 p.m. at the Public Safety Office. Permit fees are $40 per year or $20 per quarter.

Damages Charges for loss or damage in residence halls, to other University property, and to special equipment will be billed directly to the student and parents on report of damage or loss.

PAYMENT PROCEDURES

Returning Students

An advance billing statement, which estimates full-time tuition, actual residence-hall cost, and meal-plan choice, will be sent to each student at his/her permanent address. Any student who registers is obligated to pay tuition and fees by the published financial clearance (payment) date, even if he/she does not receive a bill. For the 1997–98 academic year, the financial clearance deadlines are as follows:

Fall quarter	Aug. 29, 1997
Winter quarter	Nov. 25, 1997
Spring quarter	March 2, 1998

These dates are subject to change without notice.

Registration will not be automatically canceled because no payment was received or the student did not attend. If payment is not received or a proper deferment is not obtained through the Office of Student Loan Services, a late payment fee will be assessed and a hold will be placed on the record. The hold will prevent the release of transcripts or diplomas and prevent registration and access to any of the telephone registration services or other University services. Inquiries regarding account status should be directed to the Office of Student Accounting Services (408-554-4412). Remittances should be made payable to Santa Clara University and mailed to Santa Clara University, File 72662, P O Box 60000, San Francisco CA 94160-2662.

Rights and Responsibilities

Santa Clara University considers all student tuition and loan accounts as legal and moral obligations. The Office of Student Accounting Services will notify the student of outstanding accounts. However, it is the student's responsibility to maintain current address records at the Office of Student Records. Accounts that remain unpaid may be reported as delinquent to a credit bureau. These accounts may be placed with a collection agency or an attorney, and the student will be responsible for collection costs and attorney's fees.

Students who have unpaid accounts at the University or who defer payment without approval are subject to dismissal from the University.

Incoming Freshmen and Transfer Students

The University requires payment in full of tuition, residence-hall assignment charges, and meal-plan cost by the last day of the add/drop period for that term. An advance billing statement, which estimates full-time tuition, actual residence-hall assignment, and board-plan choice, will be sent to the permanent address. The statement must be paid by the due date on the bill to avoid assessment of a late payment fee.

MONTHLY PAYMENT PLANS

Many families prefer to pay academic expenses from monthly income rather than make large cash payments. Several payment plans are available to accommodate those needs. For more information, please contact the Office of Student Accounting Services.

Families who do not choose a monthly payment plan may either pay all charges by the financial clearance deadline or take advantage of one of several deferred payment plans administered by outside agencies. Families who plan to use one of these agencies should complete the details with the sponsoring agency at least six weeks prior to registration. The names and addresses of these agencies are available from the Office of Student Accounting Services.

GUARANTEED TUITION PLAN

The Guaranteed Tuition Plan is a payment plan whereby families may prepay up to four years of tuition. The University guarantees that the student's tuition will not increase during the prepaid period. Payment of the required prepaid tuition and mandatory fees may be made in the following ways:

1. Lump sum payment from the family's own resources
2. Prepaid loan from a commercial lender

SANTA CLARA UNIVERSITY TUITION REFUND POLICY

The following schedule is for students who withdraw completely from the University after the first day of classes published for the term. It does not apply to students who withdraw from a class or classes after the end of the add/drop period but remain enrolled for the term. Full-time students who drop courses after the last day to add classes for the term will be considered full time for the remainder of the term. No tuition adjustment will be made.

The date on which written notification of withdrawal is received at the Office of Student Accounting Services will be the effective date on which any refund of tuition will be determined, not the last date of attendance by the student. This policy also applies to incremental tuition, special course fees, and lab fees. Written notification of withdrawal must be received prior to the first scheduled day of classes to qualify for a full tuition refund less a $50 registration cancellation fee. Written notification of withdrawal received on or after the first scheduled day of classes will result in a refund of tuition according to the following schedule:

Prior to the start of the quarter*	100%
During the first week of the quarter	75%
During the second week of the quarter	50%
During the third week of the quarter	25%

NO FURTHER REFUNDS AFTER THE THIRD WEEK

No refunds will be made because of curtailment of services brought about as a result of strikes, acts of God, civil insurrection, riots or threats thereof, or other causes beyond the control of the University. All fees, charges, and refund schedules in this bulletin are subject to change without prior notice.

FEDERAL REFUND POLICY

In addition to the institutional refund policy, all students who withdraw completely from the University and who have federal financial aid, including federal student loans, are subject to the federal refund policy. Under the federal refund, institutional charges are refunded as follows:

100 percent of institutional charges, less an administrative fee, if any, if student withdraws on or before the first day of classes for period of enrollment for which he or she was charged;

*Less registration cancellation fee. The start of the quarter is considered to be the first date on which instruction begins for Santa Clara undergraduate programs.

90 percent of institutional charges, less an administrative fee, if any, if student withdraws after the first day of classes, up to and including the first 10 percent of that period of enrollment;

50 percent of institutional charges, less an administrative fee, if any, if student withdraws after the end of the first 10 percent of period of enrollment, up to and including the end of the first 25 percent of that period of enrollment; and

25 percent of institutional charges, less an administrative fee, if any, if student withdraws after the end of the first 25 percent of period of enrollment, up to and including the end of the first 50 percent of that period of enrollment.

The federal and institutional refunds will be compared, and the refund calculation resulting in the largest refund to the student will be applied.

Additionally, for those federal aid recipients who are first-time students at Santa Clara University and who withdraw on or before the 60 percent point in time of enrollment period for which they were charged, a statutory pro rata refund must be calculated.

Examples of common refund situations are available from the Financial Aid Office located in the Walsh Administration Building.

All refunds must be returned to federal programs before being returned to state or institutional aid programs and/or the student. This refund allocation will be made in the following specific order and will be applied to all students who have received federal Title IV assistance:

1. Unsubsidized Ford Federal Direct Loan Program
2. Subsidized Ford Federal Direct Loan Program
3. Federal Direct Plus Loan Program
4. Federal Perkins Loan Program
5. Federal Pell Grant Program
6. Federal Supplemental Educational Opportunity Grant Program
7. Other federal, state, private, or institutional assistance programs; and
8. Student

REFUND OF ROOM CHARGES

Students who reside in University residences for less than a full term will be assessed prorated room charges based on the schedule stipulated in the Student Housing Contract and will be charged a $250 residence hall contract cancellation fee. Students who are evicted from, move from, or otherwise withdraw from University housing during an academic term and who have not been released from the contract will continue to be assessed room charges for the remaining portion of that term.

FINANCIAL AID

Santa Clara University maintains a broadly based program of financial assistance for its students. Administered by the Financial Aid Office, this resource

helps bridge the gap between the cost of education and what parents and students can reasonably contribute.

The financial need of each family is estimated from information supplied on the Free Application for Federal Student Aid (FAFSA) in combination with the College Scholarship Service (CSS) Financial Aid PROFILE form.

A financial assistance package is prepared for the student based on this estimate and subject to the amount of total aid dollars available and any adjustments made by the Financial Aid Office. Depending on the student's eligibility, an aid package may include any combination of the following: scholarships, grants, loans, or part-time on-campus employment.

Financial help from the University and other sources should be viewed as supplementary to the efforts of the student and family. Santa Clara University believes that the maximum effort to assist students with college expenses rests with the family. Working together, families and the University can ensure that although the cost of a college education is high, it need not be prohibitive.

More complete information about the University's financial aid program is available in the Student Financial Services bulletin, *Affording a Santa Clara Education.* Specific answers concerning information in the bulletin are available from the Financial Aid Office (408-554-4505).

Third-Child Family Grant

The University offers a special one-half tuition remission to families who have three dependent undergraduate students concurrently enrolled at Santa Clara. The program's conditions are

1. all three students must be concurrently enrolled as undergraduates;
2. all three students must be dependent on parents;
3. parents must apply for the program by submitting a letter requesting the Third-Child Family Grant and a copy of their latest federal income tax return showing all three students as dependents; and
4. all financial aid deadlines should be followed when applying.

Applications

Aid packages including any combination of scholarships, grants, loans, and on-campus employment may vary in dollar amount each year depending on the student's family financial circumstances. Packages are renewable annually provided the student fulfills the University's requirements and reapplies each year by the application priority deadlines indicated below. New undergraduate applicants with completed documents on file by Feb. 1 preceding September enrollment should be notified of their aid eligibility no later than June 1. Undergraduate renewal applicants must reapply by March 2 each year and will receive notification of their aid eligibility prior to fall registration.

To apply for financial aid consideration, a student must submit the following documents by the indicated dates:

1. **Submit required documents**
   a. Free Application for Federal Student Aid (all students) ..... **Feb. 1**
   b. Financial Aid PROFILE (first-time applicants) ..... **Feb. 1**

2. **Submit supplementary documents (where applicable)**
   a. Financial aid transcripts (transfer students) ..... **May 1**
   b. Immigration and Naturalization Service (INS) status document (eligible noncitizens) ..... **May 1**
   c. Student's U.S. tax returns, if requested ..... **May 1**
   d. Parents' U.S. tax returns, if requested ..... **May 1**
   e. Verification documents, if requested ..... **May 1**

Qualifications

The selection of students to receive financial aid requires evidence of financial need. Once this criterion has been met, priority of consideration is given to applicants with the highest scholastic attainments. Students of exceptional academic merit should write to the director of the Honors Program.

Scholarship recipients are expected to maintain an overall grade point average (GPA) of 3.0. All other aid recipients must maintain a GPA of 2.0. All financial aid recipients must remain enrolled as full-time students (minimum of 12 quarter units) for each quarter in which aid is received and must make satisfactory progress toward a degree. Please refer to the Academic Standing section (Pages 303–5) for specific criteria on good standing, the Student Classification section (Page 303), and the "Limitations on Financial Aid Eligibility" insert that is enclosed with your award offer for specific criteria on normal progress. Financial aid may be terminated at any time for serious infractions of the University's rules and regulations. As a general rule, graduate and professional students will receive consideration for financial aid after undergraduate needs have been met. Ordinarily, financial aid is not available for noncitizens unless they are in the United States permanently and have made application for citizenship. It is the financial aid recipient's responsibility to notify the Financial Aid Office immediately of any changes in address, name, marital status, academic status, or family financial situation.

Eligibility for financial aid is for a maximum of 12 quarters. Request for an extension of this maximum must be addressed in writing to the Financial Aid Office.

All financial aid awarded will be distributed in equal installments to coincide with the number of academic periods in the year and will be placed as a credit on the student's account at the Office of Student Accounting Services.

Loans

Because scholarships and grants are limited, many students applying for aid find it most advantageous to finance a portion of their education through a loan program. Among programs available to students are Federal Perkins Loans, Federal Direct Student Loans, and Federal Direct Parent Loans for Undergraduate Students

(PLUS). Further information may be obtained by consulting the Student Financial Services bulletin, *Affording a Santa Clara Education.*

Employment

The University maintains Career Services on campus to help students secure part-time work. Students who receive financial aid are expected to contribute as much as possible from their own resources to assist in meeting their costs at Santa Clara.

Tentative Financial Aid Deadlines for 1997–98 and 1998–99

Please consult the 1997–98 edition of *Affording a Santa Clara Education,* available from the Financial Aid Office.

	1997–98	1998–99
Winter quarter	Dec. 1, 1997	Dec. 1, 1998
New scholarship and grant consideration	Feb. 1, 1998	Feb. 1, 1999
Perkins Loan and Work-Study (nonrecipients)	Feb. 1, 1998	Feb. 1, 1999
Spring quarter	March 1, 1998	March 1, 1999
Cal Grants	March 2, 1998	March 2, 1999
Financial aid renewal	March 2, 1998	March 2, 1999
Pell Grants (apply as early as possible)	May 15, 1998	May 15, 1999

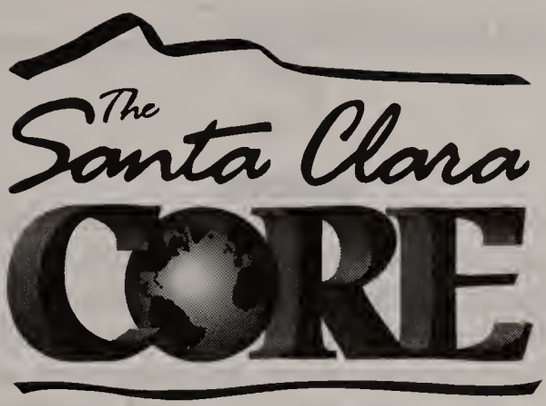
These deadlines are tentative and should be confirmed with the Financial Aid Office after October 1997.

Veterans and Veterans' Dependents Assistance

Santa Clara University is listed by the Department of Veterans Affairs as qualified to receive students under Chapter 35 (veterans' dependents—son or daughter with parent deceased or 100 percent disabled, widow of any person who died in the service or died of a service-connected disability, or wife of a veteran with a 100 percent service-connected disability); Chapter 31 (rehabilitation); Chapter 30 (active duty Montgomery G.I. Bill); Chapter 34 (old G.I. Bill); and Chapter 32 (Post-Vietnam Era Veterans' Educational Assistance Program [VEAP]). Those interested in attending under any of these chapters should contact the Veterans Administration Office in their locality to determine eligibility for benefits.

The state of California provides a program for children of veterans who are deceased or disabled from service-connected causes. Application should be made to the California Department of Veterans Affairs, 350 McAllister St., San Francisco, CA 94102.

Information regarding these programs may be obtained from the Santa Clara University veterans' counselor in the Student Records Office.



COMMUNITY AND LEADERSHIP FOR A GLOBAL SOCIETY

A university expresses its most basic values in its core curriculum, that part of an undergraduate education required of all students. The Santa Clara Core Curriculum, adopted in fall 1996 after four years of University-wide discussion, combines traditional core strengths with a new emphasis on curricular integration, world cultures, and technology. It stems from the University Statement of Purpose and the University Goals adopted in October 1993. Goal Number Four states: "To be a learning environment that integrates rigorous inquiry, creative imagination, reflective engagement with society, and a commitment to fashioning a more humane and just world."

Within this governing framework, Santa Clara University encourages all its members to participate in the pursuit of truth and the common good. The University emphasizes the Catholic and Jesuit traditions of spirituality, intellectual excellence, study of Western and world cultures, internationalism, the promotion of faith and justice, and leadership as service to others. The University Core Curriculum seeks to further these values by fostering the strengths of a liberal education, including religious studies and ethics.

COMMUNITY

University Goal Number Six is "Nurture a diverse University community rooted in mutual understanding and respect."

Accordingly, the Core seeks to create a University learning environment in which diverse perpectives interact to enliven, enrich, and broaden one another. This University environment is intended to model and to foster lifelong collaborative learning as service to the broader civic community. The University Core Curriculum aims at the active engagement of Santa Clara University graduates in the building of strong and diverse communities.

LEADERSHIP

University Goal Number One is "Educate for leadership in the Jesuit tradition."

In the Jesuit tradition, competence, conscience, and compassion are integrally linked. In this context, leadership fuses thought, feeling, and action in the service of values and purposes that support and promote the common good. We encourage that type of leadership among students, as a vocation both within and beyond the University. We seek to foster self-knowledge, as well as self-confidence and initiative, so that students may articulate their own ideas and inspire others toward a commitment to create a sustainable, humane, and just world.

GLOBAL SOCIETY

The University Statement of Purpose calls for "educational programs designed to provide breadth and depth" and "the integration of different forms of knowledge." In the context of the rapid internationalization of contemporary life, swift technological change, and religious, philosophical, and cultural pluralism, citizens must be able to work in diverse groups. Furthermore, many problems transcend the expertise of a single specialist. We seek to educate students who will be able to address issues within their multidisciplinary and global context.

THE SANTA CLARA CORE: THEMES AND REQUIREMENTS

The Santa Clara Core Curriculum expresses the University's strongest values in an integrated whole. It is hoped students will not just experience Core requirements as individual courses but as related educational experiences that help structure the students' whole University study. The Santa Clara Core Curriculum is a series of three themes and clusters that explore those themes.

The progression of those themes is not strictly chronological, nor will all students study Core courses in exactly the same sequence. They will, however, study the same courses based upon the same sets of criteria for inclusion in the Core. The Santa Clara Core Curriculum expresses the psychological dynamics of focusing on one's own identity "within the community" (Who am I?), "moving out" to encounter new realities (What is the world like?), and then "returning to oneself" to integrate these new realities into one's worldview as a basis for leading others (What is my relationship to the world? How should I act?). All of these stages, of course, take place every day for all learners. Thus, while each cluster has a primary theme, all three themes ought ultimately to find expression in each cluster. Senior Capstones, departmental majors and minors, and University interdepartmental programs are other important ways of assisting students to integrate their complete University experience.

FIRST THEME: COMMUNITY: A SENSE OF PERSON AND PLACE

English Composition (2)
United States
Religious Studies (first course)
Western Culture (2)

SECOND THEME: GLOBAL SOCIETIES: METHODS OF INQUIRY, INTERACTION, AND ANALYSIS

Mathematics
Natural Science
Technology
Social Science
Second Language
World Cultures/Societies (2)

THIRD THEME: LEADERSHIP: INTEGRATION AND PERSPECTIVE

Ethics
Religious Studies (second and third courses)
Third Writing Course

5

College of Arts and Sciences

Dean: Peter A. Facione
Associate Dean: Philip Boo Riley (Religious Studies)
Associate Dean: Janet A. Flammang (Political Science)
Assistant to the Dean: Judy E. Gillette

Office of the Dean: Ramos Center (408-554-4455)

The goal of the College of Arts and Sciences is to create a learning community characterized by a spirit of inquiry, mutual respect, intellectual excitement, and a commitment to address the fundamental problems of society. In this way, the College is the center of Santa Clara's Jesuit, liberal education.

With more than 1,000 courses in the humanities, arts, social sciences, and natural sciences, the College provides

- a common educational experience for all undergraduate students at Santa Clara through the University's Core Curriculum;
- majors in 29 subject areas;
- opportunities for further study in a student's particular area of interest; and
- interdisciplinary minor programs.

While all undergraduate students at the University explore the liberal arts and sciences through the University's Core Curriculum, those who select majors or minors in the College develop specialized knowledge and skills in an area of concentration that reflects their personal interests and talents. Students can expect the College's courses to challenge them in many ways: to develop open and critical thinking; to communicate effectively; to work with complex methods of inquiry; to understand diverse cultures and peoples; to appreciate the demands of principled ethical decision making.

The College confers the degrees of Bachelor of Arts in Art, Chemistry, Classics, Communication, English, French, German, History, Individual Studies, Italian, Liberal Studies, Music, Philosophy, Religious Studies, Spanish, and Theatre and Dance.

It confers the degrees of Bachelor of Science in Anthropology, Biology, Chemistry, Combined Sciences, Computer Science (Mathematics), Economics, Engineering Physics, Individual Studies, Mathematics, Physics, Political Science, Psychology, and Sociology.

Students are encouraged to use elective courses to pursue particular interests beyond their chosen major. In addition to selecting individual courses, students have the opportunity to organize their electives to pursue minors and emphases in 30 departments and interdisciplinary programs throughout the College.

BACHELOR OF ARTS

The program of study for the degree of Bachelor of Arts, which consists of a total of 175 quarter units, includes courses that fulfill the goals of the University Core Curriculum, the College of Arts and Sciences curriculum, and the student's major curriculum.

For the Bachelor of Arts degree, students must fulfill the following requirements. The courses approved as fulfilling these requirements for the 1997–98 academic year are listed in the *Undergraduate Student Handbook* and the *Undergraduate Schedule of Classes*. Note: Students may count courses as fulfilling more than one requirement if the courses have been approved as meeting the goals, outcomes, and criteria of more than one requirement.

English Composition

Two courses, normally, English 1 and 2, or equivalent.

Third Writing

One course emphasizing writing from the list of approved courses.

Western Culture

Three courses in one of the following sequences: (a) English 11, 12, and 13; (b) History 11, 12, and 13; (c) Philosophy 11, 12, and 13; (d) Art History 11, 12, and 13; or (e) Performance and Culture 11, 12, and 13. The three courses in Western Culture should normally be taken in sequence.

Second Language

Successful completion of the third course of the first-year sequence in a single classical or modern foreign language. Students who have successfully completed the fourth year of study in a single classical or modern foreign language during high school or who demonstrate an equivalent level of proficiency by passing a language proficiency examination are exempt from this requirement.

Social Sciences

One course from the list of approved courses.

Mathematics and Natural Sciences

Three courses: (a) one course in mathematics; (b) one course in natural science; and (c) one additional course in either mathematics or natural science. (Mathematics 9, 44, or 45 cannot be used to satisfy this requirement.)

Ethics

One course in ethics from the list of approved courses.

Religious Studies

Three religious studies courses: (a) two courses, normally taken during the freshman and sophomore years—one introductory level and one intermediate level; and (b) one advanced-level course taken after completing 88 quarter units. These courses are to be taken in sequence.

United States

One course from the list of approved courses.

World Cultures/Societies

Two courses from the list of approved courses. At least one must be an area studies/regional course.

Technology

One course from the list of approved courses.

Fine Arts

A minimum of 4 quarter units from the list of approved courses.

Ethnic Studies/Women's Studies

One ethnic studies or women's studies course from the list of approved courses.

Major Requirements and Electives

Each student must select one from among the 16 Bachelor of Arts majors offered by the College. The requirements for each major are provided in the pages that follow. Depending on the requirements for a particular major, students will have a number of free elective courses they may use to pursue interests in particular areas.

BACHELOR OF SCIENCE

The program of study for the degree of Bachelor of Science, which consists of a total of 175 quarter units (197 quarter units for Engineering Physics), includes courses that fulfill the goals of the University Curriculum, the College of Arts and Sciences curriculum, and the student's major curriculum.

For the Bachelor of Science degree, students must fulfill the following requirements. The courses approved as fulfilling these requirements for the

1997–98 academic year are listed in the *Undergraduate Student Handbook* and the *Undergraduate Schedule of Classes*. Note: Students may count courses as fulfilling more than one requirement if the courses have been approved as meeting the goals, outcomes, and criteria of more than one requirement.

English Composition

Two courses, normally, English 1 and 2, or equivalent.

Third Writing

One course emphasizing writing from the list of approved courses.

Western Culture

Two courses in one of the following sequences: (a) English 11, 12, and 13; (b) History 11, 12, and 13; (c) Philosophy 11, 12, and 13; (d) Art History 11, 12, and 13; or (e) Performance and Culture 11, 12, and 13. The two courses in Western Culture should normally be taken in sequence.

Second Language

Majors in Social Sciences Successful completion of the third course of the first-year sequence in a single classical or modern foreign language. Students who have successfully completed the fourth year of study in a single classical or modern foreign language during high school or who demonstrate an equivalent level of proficiency by passing a language proficiency examination are exempt from this requirement.

Majors in Mathematics and Natural Sciences Successful completion of the second course of the first-year sequence in a single classical or modern foreign language. Students who have successfully completed the third year of study in a single classical or modern foreign language during high school or who demonstrate an equivalent level of proficiency by passing a language proficiency examination are exempt from this requirement.

Social Sciences

One course from the list of approved courses.

Mathematics and Natural Sciences

Four courses: (a) a minimum of two courses in mathematics and (b) a minimum of two courses in natural sciences. (Mathematics 9, 44, or 45 cannot be used to satisfy this requirement.)

Ethics

One course in ethics from the list of approved courses.

Religious Studies

Three religious studies courses: (a) two courses, normally taken during the freshman and sophomore years—one introductory level and one intermediate level; and (b) one advanced-level course taken after completing 88 quarter units. These courses are to be taken in sequence.

United States

One course from the list of approved courses.

World Cultures/Societies

Two courses from the list of approved courses. At least one must be an area studies/regional course.

Technology

One course from the list of approved courses.

Fine Arts

A minimum of 4 quarter units from the list of approved courses.

Ethnic Studies/Women's Studies

One ethnic studies or women's studies course from the list of approved courses.

Major Requirements and Electives

Each student must select one from among the 13 Bachelor of Science majors offered by the College. The requirements for each major are provided in the pages that follow. Depending on the requirements for a particular major, students will have a number of free elective courses they may use to pursue interests in particular areas.

Academic Advising

All students in the College are encouraged to work with the faculty in determining their academic program. All students, particularly those with questions about choosing and/or changing a major, are encouraged also to consult with their assigned faculty adviser and, as necessary, the College advisers.

DEPARTMENT OF ANTHROPOLOGY AND SOCIOLOGY

Professors: Witold Krassowski, Charles H. Powers *(Chair)*
Associate Professors: Luis Calero, S.J., Alma M. Garcia, Russell K. Skowronek, George D. Westermark
Assistant Professors: Marilyn Fernandez, Mary Elaine Hegland, Kichiro K. Iwamoto

The Anthropology and Sociology Department offers two distinct degree programs leading to the Bachelor of Science in Anthropology or the Bachelor of Science in Sociology. A solid undergraduate foundation in anthropology or sociology secures the analytical skills needed to undertake professional degree programs (in anthropology, sociology, business, law, and social services) or to embark on a number of careers (from management to research).

A minor in anthropology or sociology is available. Special emphasis programs and honors thesis options are available to qualifying majors.

REQUIREMENTS FOR ANTHROPOLOGY MAJOR AND MINOR

Anthropology majors must fulfill the general requirements of the University for the Bachelor of Science degree. In addition, they must complete the following requirements:

1. Anthropology 1 (Introduction to Physical Anthropology), 2 (Introduction to Archaeology), 3 (Introduction to Social and Cultural Anthropology)
2. Sociology 1 (Principles of Sociology) and Anthropology 50 (World Geography)
3. Anthropology 116 (Theory and Method) and 124 (Senior Project)
4. Six upper-division courses in anthropology, at least one of which must be a culture area course; Anthropology 198 (Internship) is strongly recommended
5. An introductory statistics course (see adviser for recommendation)

The minor in anthropology requires completion of Anthropology 1 or 2; 3; one additional lower-division course; and three upper-division courses, at least one of which must be in an area course (Anthropology 180–189).

REQUIREMENTS FOR SOCIOLOGY MAJOR AND MINOR

Sociology majors must fulfill the general requirements of the University for the Bachelor of Science degree. In addition, they must complete the following:

1. Sociology 1 (Principles of Sociology), 33 (Social Problems in the United States), and 50 (World Geography)
2. Anthropology 3 (Introduction to Social and Cultural Anthropology)
3. Sociology 116 (Methods of Social Research), 118 (Social Theory), Sociology 123 (Applied Statistics), and 124 (Senior Project)

4. Five other upper-division courses in sociology; Sociology 198 (Internship) is strongly recommended

The minor in sociology requires completion of Sociology 1, 33, 118, and three other upper-division sociology courses.

An average grade of C must be maintained in courses in the major. By the end of the fall quarter of their senior year, majors in both anthropology and sociology must complete a senior project approved by the faculty of the department.

SPECIAL EMPHASIS PROGRAMS

Anthropology and sociology majors have the option of completing a special emphasis program to complement their majors. These programs are not narrow specializations but reflect competence in the applied fields of the disciplines. The completion of special emphasis programs will be noted on student transcripts with the approval of the department chair. Detailed descriptions of the special emphasis programs can be obtained from the department secretary.

Anthropology Special Emphases

Archaeology Focuses on a deeper understanding of the human past and how it is studied. This is a possible course of study for majors with an interest in employment in cultural resource management or graduate study in archaeology.

Human Services Combines anthropology with the study of social problems and their alleviation. This is a possible course of study for majors planning careers in human resources, gerontology, or social work in a culturally diverse society.

Law and Society Combines anthropology with the study of legal institutions and conflict resolution. This is a possible course of study for majors planning careers in law or law enforcement.

Sociology Special Emphases

Business, Technology, and Society Links sociological principles and practices with management and administration of enterprises in the public and private sectors. This is a possible course of study for majors planning careers in business or public administration.

Human Services Combines sociology with the study of social problems and their alleviation. This is a possible course of study for majors planning careers in human resources, gerontology, or social work in a culturally diverse society.

Law and Society Combines sociology with the study of legal institutions and conflict resolution. This is a possible course of study for majors planning careers in law or law enforcement.

ANTHROPOLOGY

1. Introduction to Physical Anthropology

Study of the origin and antiquity of man, the fossil evidence for human evolution, primate behavior, and human variation in morphology, serology, and genetics.

2. Introduction to Archaeology

Survey of the evolution of human culture during the prehistoric period in the Old World and the New World. Examination of the methods archaeologists use to study the past.

3. Introduction to Social and Cultural Anthropology

Concept of culture, the development and evolution of social and cultural analyses of the major subsystems of culture (economic, ethnological, social and political organizations, philosophy, and worldview), and selected issues of social concern; racism, cultural determinism, cultural relativity.

4. Vanished People and Lost Civilizations

Examination of "popular anthropology." Humans and their culture, human origins, and the development and understanding of human behavior. Evaluation of theories and assumptions in the popular literature in light of current anthropological knowledge.

50. World Geography

Introduction to the geographical perspective—a spatial viewpoint—in the study of the locations and distributions of physical and human phenomena on the earth's surface. Major global social, political, and economic problems discussed. (Also listed as Political Science 50.)

51. Religion, Ritual, and Politics

Examination through case studies of the uses of religion and ritual in politics: in legitimizing the status quo, in political competition, and in organizing passive and active political resistance. How and why religion and ritual are used in political activity such as black history, the revolution in Iran, sexual politics, Communist and Catholic parties in Italy. Possible reasons for the current religious resurgence in the United States and elsewhere. (Also listed as Religious Studies 97x.)

56. Anthropology of Religion

Relation of religion to culture, personality, and social organization. Theories on the functioning of myth, ritual, and symbolism. Religious leaders, interpretations of death and afterlife, traditional curing, and religious movements and cults. (Also listed as Religious Studies 98x.)

86. Native American Cultures§

Study of the range of variation in Native American cultures. Examination of changes in recent history as well as contemporary issues.

88. Women in the Middle East‡

Examination through monographs, novels, and films of the situation and activities of Middle Eastern women in a variety of geographical and class settings. Women in economic and political process, family and kinship, wars of liberation and revolution. Women and gender symbolism as related to politics, development, social change, and religious resurgence.

90. Cross-Cultural Study of Women‡§

Cross-cultural examination of the roles and statuses of women and men. Exploration of factors affecting the lives of women and men, such as public and domestic realms of activities, political and economic factors, and family and socialization practices. Comparisons of the situation of women and men in the United States to determine the origins and future of sex roles in our own society.

§ Course included in Ethnic Studies Program ‡ Course included in Women's Studies Program

91. Lower-Division Seminar in Anthropology

Seminar for freshmen and sophomores on selected issues in anthropology. *By permission of the instructor only.* NCX†

116. Theory and Method in Anthropology

Logic of research procedures and theoretical issues associated with anthropological practice. Skills and methods of designing and analyzing research explored in readings and exercises. History of anthropological thought. Required for majors and minors in anthropology. *Prerequisites: Anthropology 1, 2, 3, and 50, and Sociology 1 with grades of C– or better, or special permission of the department chair.* NCX†

118. Social Theory

In-depth treatment of innovations and developments in social thought. Emphasis on explaining what is essential about particular theoretical frameworks, how they can be used, and why they should be given attention.

124. Senior Project

Senior majors complete their projects under the guidance of faculty advisers and make seminar presentations of their work. *Prerequisite: Anthropology 116 with a grade of C– or better, or special permission of the department chair.* NCX†

144. Cultural Ecology

Survey of the theories, methods, and applications of the ecological perspective to the cultural attributes of past and present human populations. Emphasis on the relationship between the natural environment and human cultural systems.

145. Mesoamerican Prehistory

A survey of the prehistoric cultures of Mesoamerica from earliest human occupation to European colonization. Examines the origins of agriculture, village life, and the rise and fall of state-level societies through the work of archaeologists and epigraphists. Consideration given to the ecological adaptations, social organization, and belief systems of the Aztecs, Toltecs, Maya, and the inhabitants of Teotihuacan. *Prerequisite: Anthropology 2 or consent of instructor.*

146. Perspectives on the Spanish & Native American Experience§

Examines the Spanish penetration and conquest of the New World. Considers changes that influenced both the Native Americans and European immigrant populations to form new ethnic groupings. Ethnohistorical, documentary, and archaeological records applied to explore relevant topics.

149. North American Prehistory

Survey of the prehistoric cultures of North America and Northern Mexico from earliest human occupation to European colonization. *Prerequisite: Anthropology 2 or consent of instructor*

150. Religion in Culture and Society

Cross-cultural examination of religions in a range of human societies. Emphasis on religious pluralism, religious movements, and secularism in the contemporary world. (Also listed as Religious Studies 189x.)

151. Law and Society

Current issues in the study of law and society. Exploration of legal systems at various levels of societal complexity to understand the basis for social control in all human societies. Courts, legal professions, and politics from a cross-cultural perspective. (Also listed as Sociology 151.) *Prerequisite: Anthropology 3, Sociology 1, or consent of instructor.*

152. Political Anthropology

Cross-cultural examination of political behavior in a range of human societies and the effects of social, cultural, and environmental factors on political organization. Religion and politics, the role of women in politics, ethnic competition,

† Exempted from challenge § Course included in Ethnic Studies Program

secret societies, political ritual and ceremony, and the effects of colonialism and economic change. Special emphasis on the relationship between local communities and national governments.

153. Peasant Societies

Examination of the nature of peasant societies and the changes they are facing in Africa, Asia, and Latin America. Topics include land scarcity, poverty, urban migration, and political turmoil.

154. Islam in the Middle East

Examination of the variety of religious experiences, activities, and interpretations among Muslims and of the place of Islam in current social and political life such as community organization, local-level politics, governments and political resistance, women's roles, and contact with the West. Discussion of the underlying reasons behind the recent resurgence of Islam and its effects on Muslim societies. (Also listed as Religious Studies 191x.)

155. Conflict Resolution

Examines sources and responses to conflict in varied social and cultural contexts. Emphasis on application of negotiation, mediation, and arbitration in different fields.

157. Family and Kinship‡

Ways in which kinship and family life can be organized. Causes and consequences of different family patterns. How families differ across cultures, over time, and among different groups in the United States.

158. Applied Anthropology

Application of anthropological knowledge to contemporary human problems. Topics range from the introduction of new crops in agricultural development to miscommunication in international business. Concerns of education, health, and volunteer services. Implications of ethical problems and theories of social change.

160. Urban Life

Cross-cultural examination of life in urban environments. Emphasis on how the city shapes various social institutions ranging from the family to religious associations. Transition from rural to urban life in relation to such factors as economic change, migration, and ethnic affiliation.

165. Human Services

Examination of underlying forces that give rise to social problems and assessment of the effectiveness of policies and programs intended to enhance general welfare. Discussion of work and management issues in public and nonprofit agencies that provide social services, with particular emphasis on how agencies and their staff balance agency goals, client needs, funding, and programs evaluation. Consideration of human services in a multicultural context, with focus on culture-specific service needs and service provision. Opportunities to learn from practitioners in human services; exposure to a range of employment opportunities in human services. *Prerequisite: Anthropology 3, Sociology 1, or consent of instructor.*

167. Historical Archaeology

Introduction to the discipline of historical archaeology. Traces its emergence and development including controversies regarding its relationships with the larger fields of history and anthropology. Introduction to the variety of data sources used by historical archaeologists to aid in interpretation of the historical past. *Prerequisite: Anthropology 2 or consent of instructor.*

172. Anthropology of Aging

Cross-cultural examination of the aging process in a range of human societies. Emphasis on level of technology, degree of urbanization, rate of social change as well as social, political, and cultural differences in understanding how the elderly adapt to, and cope with, the modern world.

‡ Course included in Women's Studies Program

180. Study of Selected Cultures

Examination of the social life, culture, and institutions of geographic areas and culture zones not otherwise covered in Anthropology 181–188 regional studies course series.

181. Pacific Island Societies

Examination of the societies of the three culture areas of the Pacific: Melanesia, Micronesia, and Polynesia. Comparison of archaeological evidence, traditional ecological adaptations, social organization, and belief systems. Colonialism, economic change, migration, and political independence.

185. Peoples of Latin America

Examines the diversity of Latin America, a continent of great physical, archaeological, cultural, and socioeconomic contrasts; the mix of races and cultural traditions; human adaptation to the natural environment; economic and social inequalities; and the common heritage of Latin American peoples.

187. Native American Cultures of the Pacific Coast§

Examination of the diversity of Native American cultures found along the West Coast of North America from California to Alaska. Use of archaeological, ethnographic, and historic information to compare/contrast economies, social organization, and belief systems in the past and present.

188. People, Culture, and Change in the Middle East

Examination of people's lives, social organization, and change in the Middle East through archaeological evidence, ethnographies, film, and novels. Emphasis on political culture, the fate of tribal peoples and peasants under modernizing nations, women in society and gender symbolism, contact with the West, Islam and religious resurgence, and revolution.

193. Advanced Seminar in Anthropology

Seminars for juniors and seniors on selected topics in anthropology. *By permission of the instructor only.* NCX†

196. Archaeological Method and Theory

Introduction to the techniques of discovery and analysis that archaeologists have found useful in research. Special attention to sampling techniques in survey and excavation. Classification techniques for measuring parameters of prehistoric demography, diet, craft specialization, and exchange.

197A, 197B. Field Course in Archaeological Method

Six weeks of on-site archaeological field research. Practical experience in the basic techniques of excavation and field analyses. *By permission of the instructor only.* NCX†

198. Internship

Opportunity for students in good standing to work and conduct anthropological analyses in community agencies, government bureaus, and political or industrial organizations. *Must receive departmental approval prior to registration.* NCX†

199. Directed Reading/Directed Research

Intensive reading in areas not emphasized by the department. Independent research on specific topics not fully covered in departmental courses. *Written departmental approval necessary prior to registration.* NCX†

† Exempted from challenge § Course included in Ethnic Studies Program

SOCIOLOGY

1. Principles of Sociology

Introduction to the field of sociology. Emphasis on the major sociological perspectives and the basic elements of sociological analysis. Introductory exposure to research methodology.

33. Social Problems in the United States

Contemporary social problems and issues in U.S. society from a sociological perspective. Focus on the changing family, gender roles, poverty, racism, crime and violence, and international conflict.

50. World Geography

Introduction to the geographical perspective—a spatial viewpoint—in the study of the locations and distributions of physical and human phenomena on the earth's surface. Major global social, political, and economic problems discussed. (Also listed as Political Science 50.)

65. Crime and Delinquency

Broad survey of major issues surrounding the causes and nature of, and solutions to, the problem of crime and delinquency in the United States.

91. Lower-Division Seminar in Sociology

Seminar for freshmen and sophomores on selected issues in sociology. *By permission of the instructor only.* NCX†

116. Methods of Social Research

Provides students with an understanding of qualitative methods for social research by focusing on (1) classical and contemporary sociological works employing qualitative methods and (2) a selection of qualitative methods and techniques in sociology, such as comparative historical analysis, ethnography, ethnomethodology, semiotics, content and text analysis, in-depth interviewing, and interpretive biography. Students gain hands-on experience by producing a series of qualitative research projects. *Prerequisites: Sociology 33, 50, and Anthropology 3 with grades of C– or better, or special permission of the department chair; and also Sociology 118 or consent of instructor.*

118. Social Theory

In-depth treatment of developments in social thought. Emphasis on explaining what is essential about particular theoretical frameworks; how they can be used. *Prerequisite: Sociology 1 with a grade of C– or better, or special permission of the department chair.*

123. Applied Statistics

The primary goal to provide sociology majors with experience in applying quantitative methods and statistics to empirically examine and answer sociologically relevant research questions will be accomplished through several means. Students learn about two quantitative research methods—survey research and secondary analysis of quantitative data—and their usefulness in testing sociological theories. In the process they learn to develop theoretically grounded research questions to be answered using quantitative data. Statistical analysis will be conducted using a statistical package such as SPSSX or Microcase. Students who successfully complete the course can be expected to have a good background in theoretically grounded quantitative research designs and statistical analyses. *Prerequisites: Sociology 33, 50, and Anthropology 3 with grades of C– or better, or special permission of the department chair; and also Sociology 118 or consent of instructor.*

124. Senior Project

Collaborative research project conducted under the direction of a faculty member. *Prerequisites: Sociology 116 and 123 with grades of C– or better, or special permission of the department chair.* NCX†

† Exempted from challenge

127. Small Groups

Structure and social processes that occur in small groups. Power and prestige, leadership, communication networks, game theory, and distributive justice.

129. Social Dimensions of Communication

Communication as a sociopsychological and cultural process. Examination of the nature, elements, and patterns of communication at the individual, interpersonal, small-group, and organizational levels.

132. Social Stratification§

Analysis of the principal lines of social cleavage within U.S. society. Emphasis on the racial, sexual, ethnic, occupational, and class divisions prevalent in the contemporary world.

133. Politics and Society in Third World Countries

Social and political change in the Third World. Relationship between economic and social development and the emergence of democratic, authoritarian, or revolutionary regimes in Africa, Asia, and Latin America. Emphasis on ways in which the international system influences development through investigation of theories of interdependence, dependency, and neoimperialism.

134. Politics and Society in Mexico

Examination of the major social and political forces shaping contemporary Mexican society and culture. Emphasis on the relationship between social classes in Mexican society and the political development of the modern Mexican state. (Taught periodically as part of SCU's summer program in Mexico in conjunction with the National Autonomous University of Mexico.)

135. Women and Social Change in Latin America‡

Examination of the effects of social change and development policies on Latin American women. Emphasis on specific case studies of Latin American countries. Focus on marginalized women in Latin American societies.

136. Deviant Behavior

Examination of deviant behavior such as crime, mental disorder, and alcoholism. Social factors in the etiology and control of deviant behavior.

137. Social Change

Significant trends and issues in contemporary U.S. society and in the world. Utility of sociological concepts, principles, and theories for understanding social change.

138. Population and Resources

Social, economic, and political causes and consequences of population change. Population policies: population, environment, natural resources, and the quality of life.

148. Complex Organizations

Examination of bureaucracy. Structural characteristics and consequences of living in a bureaucratic society. Examples drawn from industrial organizations, mental institutions, prisons, and universities.

149. Business, Technology, and Society

Examination of the interplay between business and society. Emphasis on (1) the ways in which demographic, technological, and value changes influence business opportunities; and (2) sociological strategies for organizing successful businesses in the 1990s. *Prerequisite: Sociology 1 or consent of instructor.*

150. Ethnic Enterprises§

Examination of the social, economic, and political factors relating to the establishment of ethnic enterprises and the roles of ethnic entrepreneurs in their communities.

151. Law and Society

Current issues in the study of law and society. Exploration of legal systems at various levels of societal complexity to understand the basis for social control in all

§ Course included in Ethnic Studies Program ‡ Course included in Women's Studies Program

human societies. Courts, legal professions, and politics from a cross-cultural perspective. (Also listed as Anthropology 151.) *Prerequisite: Sociology 1, Anthropology 3, or consent of instructor.*

152. Women and Men in the Workplace‡

Examination of the status and roles of men and women in the labor force. How gender differences are developed through socialization and some of the consequences of these differences: tokenism, sexual harassment, the "glass ceiling," and the dual-career family. Includes strategies and policy remedies for gender inequality in the workplace.

153. Race, Class, and Gender in the United States§‡

Examination of the economic, social, political, and cultural experiences of women of color (Chicanas, African Americans, Asian Americans, and Native Americans) in the United States.

157. Family and Kinship‡

Ways in which kinship and family life can be organized. Causes and consequences of different family patterns. How families differ across cultures, over time, and among different groups in the United States. Fulfills Women's Studies requirement. (Also listed as Anthropology 157.)

162. Political Sociology

Analysis of power relations in the United States. Examination of different dimensions of power. Particular emphasis on the development of social protest movements.

163. Sociology of Work and Occupation

Ideological and institutional characteristics of modern industrial society and some of its basic problems, such as alienation, affluence and work motivation models, primary group influences, and leadership behavior.

164. Collective Behavior

Analytical study of collective behavior principles: typology of crowds, mass behavior, and the characteristics of publics. Introduction to social movements.

165. Human Services

Examination of underlying forces that give rise to social problems and assessment of the effectiveness of policies and programs intended to enhance general welfare. Discussion of work and management issues in public and nonprofit agencies that provide social services, with particular emphasis on how agencies and their staff balance agency goals, client needs, funding, and program evaluation. Consideration of human services in a multicultural context, with focus on culture-specific service needs and service provision. Opportunities to learn from practitioners in human services; exposure to a range of employment opportunities in human services.*Prerequisite: Sociology 1, Anthropology 3, or consent of instructor.*

166. Sociology of Crime

Relationship between crime and society. Discussion of theories of criminal behavior, white-collar crime, juvenile crime, women and crime, prisons, the death penalty, and the philosophy of punishment.

172. Sociology of Aging

Introduction to social gerontology. Theoretical approaches and research in social gerontology; the elderly—public attitudes, self-image, social bonds, living environments, public policies, programs, and major problem areas; death and dying.

175. Race and Inequality§

Analysis of the socioeconomic and political situation of African, Asian, Hispanic, and Native Americans in contemporary U.S. society. Topics include race and class, occupational and economic inequality, racial discrimination, the culture of poverty, cultural stereotyping, and resistance to change.

§ Course included in Ethnic Studies Program ‡ Course included in Women's Studies Program

176. Elder Law

A survey of public policy issues particularly affecting the elderly. Consideration of the legal aspects of death and dying, involuntary commitment, guardianship and conservatorship, age discrimination, public benefit programs, and nursing homes.

177. Intercultural and International Communication

Communication in the "global village." Examination of the nature, characteristics, and structures of intercultural transactions using the sociopsychological and anthropological approaches. A framework for analysis of the theoretical and applied aspects of international communication with emphasis on the formal interactions between nations and their governments in the forms of diplomacy and propaganda.

193. Advanced Seminars in Sociology

Seminars for juniors and seniors on selected issues in sociology or current problems of social relevance. NCX†

198. Internship

Opportunity for students in good standing to work and conduct sociological analyses in community agencies, government bureaus, and political or industrial organizations. *Must receive departmental approval prior to registration.* NCX†

199. Directed Reading/Directed Research

Intensive reading in areas not emphasized by the department. Independent research on specific topics not fully covered in departmental courses. *Written departmental approval necessary prior to registration.* NCX†

DEPARTMENT OF ART

Professor: Samuel R. Hernandez
Associate Professors: Eric C. Apfelstadt, Brigid S. Barton, R. Kelly Detweiler *(Chair)*, Susan J. Felter
Assistant Professors: Constance Cortez, Kathleen Maxwell
Senior Lecturer: Gerald P. Sullivan, S.J.
Lecturer: Andrea Pappas
Adjunct Lecturer: Ron Nelson

The Department of Art offers two distinct programs leading to a Bachelor of Arts degree. Art majors choose between art studio and art history for an emphasis in their degree program. The major integrates theory with practice so that those students choosing studio will acquire a strong foundation in art history and those studying art history will acquire some practical knowledge of the processes of making art.

The process of making art is an age-old form of personal expression and nonverbal communication. We strive to offer a comprehensive foundation program that gives the art major the necessary skills to pursue graduate study or careers in the arts. Many art majors are using their creative skills in the computer industry and related image and graphics companies. The art studio curriculum provides nonmajors with a creative alternative and a chance to express themselves in a hands-on environment. The College of Arts and Sciences Fine Arts requirement can be fulfilled by any studio art course.

† Exempted from challenge

Studying the history and criticism of art develops important skills of research and analysis, reflection and discrimination, and oral and written communication. The knowledge and skills developed in art history courses offer an excellent preparation for careers in communication, education, business, and other fields. Art history majors often pursue graduate study as well as jobs in arts administration for museums, galleries, and community arts organizations. Other options include art restoration, historical research, and teaching.

REQUIREMENTS FOR MAJOR AND MINOR

In addition to completing the requirements specified below, art majors must fulfill the College and University Core Curriculum requirements for the Bachelor of Arts degree. Studio art or art history courses taken during a term of study abroad normally may be applied to no more than half of the requirement for a major or minor in art at Santa Clara University. Students who wish to receive credit toward a major or minor in art for studio art courses taken at other institutions must, in any case, be able to document their work for review by members of the Art Department faculty.

Studio Art Emphasis

The studio art major requires 13 courses:

1. Art History 11, 12, and 13 *(Note: This sequence may be used by studio art majors simultaneously to fulfill the University's Western Culture requirement.)*
2. A minimum of two lower-division studio art courses, which must include at least one course from Art 15–57 and one from Art 63 or 64
3. A minimum of eight upper-division art courses, which must include at least six studio art courses and one art history course

Students emphasizing studio art are also required to exhibit their work in the Art Department gallery during spring quarter of their senior year.

The studio art minor requires seven courses:

1. One course from Art History 11, 12, or 13
2. One course from Studio Art 15–57 and one from Studio Art 63 or 64
3. Three upper-division studio art courses
4. One upper-division art history course

Art History Emphasis

The art history major requires 13 courses:

1. Art History 11, 12, and 13 *(Note: This sequence does not fulfill the University's Western Culture requirement for art history majors, who must select a Western Culture sequence in English, History, Music/Theatre and Dance, or Philosophy.)*

2. Two lower-division studio art courses, either one from Studio Art 15–57 and one from Studio Art 63 or 64 or Studio Art 10 and one from Studio Art 15–64
3. Eight upper-division art courses, which must include at least six art history courses

The art history minor requires seven courses:

1. Two courses from Art History 11, 12, or 13
2. One lower-division studio art course
3. Three upper-division art history courses
4. One additional course in art history or studio art

STUDIO ART

A lab fee may be exacted for all studio courses to help defray the cost of materials. Note: For courses that charge fees, see the Undergraduate Schedule of Classes. *Proper credentials will admit a student to the Art Building after closing and on weekends.*

10. Introduction to Studio Art

Introduction to fundamental principles and techniques of two- and three-dimensional art. Concepts such as color, composition, and light and the reductive, manipulative, and additive methods of sculpture. Studio course.

15. Basic Photography

Introduction to photography as an art form. Includes basic camera vision and technique, as well as black-and-white darkroom work. Assignments attempt to stimulate visual awareness and individual creativity. Camera with manual shutter speeds and aperture capabilities required. Studio course.

33. Basic Drawing

Introduction to various drawing media and techniques as well as the problems of self-expression involved in traditional and contemporary drawing. Studio course.

36. Graphic Design

A computer-based course in the basic elements of graphic design. Layout and design, designing with type and photo manipulation. Software platforms include Adobe Photoshop, PageMaker, and Illustrator. Sample projects include poster design, letterhead and business cards, and other forms of advertising and layout.

43. Basic Painting

Introduction to the basic skills and concepts requisite for self-expression in painting media. Emphasis on color and composition. Studio course.

46. Basic Watercolor

Introduction to techniques and materials of watercolor painting. Studio course.

53. Basic Printmaking

Introduction to basic printmaking techniques as an art form. Linoleum block, wood block, and mono printing. Studio course.

57. Basic Etching

Introduction to intaglio printing techniques on metal plates through a process of drawing and etching with acids. Studio course.

63. Basic Ceramics

Introduction to three-dimensional problems, materials, and techniques. Handbuilding, mold-making, glazing, and firing. Studio course.

64. Basic Sculpture

Introduction to the fundamentals of art in a three-dimensional form, including materials and techniques and the problems of expression peculiar to sculpture. Studio course.

70. Art in the Computer Age

A lecture, discussion, and activity course that explores the societal impact of the digital revolution in the arts, especially the visual arts. Examines pitfalls and benefits of embracing the power of vision in the digital imagery explosion in the education, entertainment, advertising, and fine art. Projects involve Internet searches and global communication. Students explore and discuss the various legal, moral, and sociological questions raised by the current technological advances.

97. Special Projects

For lower-division students who want to do an art project not covered in the catalog. Under the direction of a member of the Art Department faculty. Group meetings with the teacher to discuss progress. May be repeated for credit. *Open to majors; nonmajors with permission of instructor.*

101. Photography

Black-and-white photography beyond the basic level. Emphasis on the exploration of individual abilities and expression. Includes collage, hand coloring, artificial lighting, portraiture, and independent projects suitable for each student. Also includes some study/discussion of photography as it relates to contemporary fine art theory and practice. May be repeated for credit. *Prerequisite: some previous experience in black-and-white darkroom work.*

131. Life Drawing

Drawing from the model stressing composition, anatomy, and creative drawing. Studio course. May be repeated for credit. *Prerequisite: Art 33 or permission of instructor.*

136. Graphic Design

A computer-based course that builds upon the basic elements presented in the lower-division course. Additional software packages and more elaborate projects explored. More emphasis is placed upon the development of a personal style. May be repeated for credit. *Prerequisite: Art 36.*

138. Multimedia Computer Workshop

Instruction in using storyboards and Macro-Media Director software to create and assemble imagery, music or sound, and video into an interactive format. May be repeated for credit. *Prerequisite: Basic knowledge of Adobe Photoshop or other image creation software.*

143. Painting

Further study of various styles, techniques, and media in painting. Studio course. May be repeated for credit.

146. Watercolor

Further study of the techniques and materials of watercolor painting. Studio course. May be repeated for credit. *Prerequisite: Art 33, 43, or 46, or permission of instructor.*

153. Printmaking

Continuation and extension of Art 53. Printmaking techniques are refined and elaborated. Studio course.

157. Etching

Continuation of Art 57. May be repeated for credit. *Prerequisite: Art 33 or 57.*

163. Ceramics

Advanced ceramics procedures. Slip casting, throwing on the wheel, combinations of various materials. May be repeated for credit.

164. Sculpture

Continuation of Art 64. May be repeated for credit.

193. Computer Design Workshop

An interdisciplinary workshop for engineering, art, and communication students. Graphics computers and software. Students work in teams to explore solutions to important social problems, use the computer to illustrate solutions, and complete formal presentations of their findings. Limited enrollment. (Also listed as COMM 193 and MECH 193.) *Prerequisite: permission of instructor.*

194. Computer Art

Students use Macintosh computers to draw and manipulate imagery and photos. Emphasis on artistic exploration and development of individual abilities and interst. Primary software instruction in Adobe Photoshop, with additional software available such as Kai's Power Tools and Fractal Painter. May be repeated for credit. *Prerequisite: any studio art course.*

195. Web Design Workshop

A multidisciplinary class involving faculty from art, communication, business, and engineering. Students design their own Web page while receiving instruction from various faculty about their particular disciplinary approach to the problem. Students work on Macintosh computers and use Adobe software to create their page.

196. Studio Art Seminar

Recommended for all junior and senior studio art majors. Preparation for graduation and the rigors of graduate school or professional job solicitation. Among the topics covered are graduate school applications, resume preparation, artwork preparation for exhibition, and photography of artwork.

197. Special Projects

For advanced students who want to do an art project not covered by the courses in the catalog. Under the direction of a member of the Art Department faculty. Group meetings to discuss progress with one another and with the teacher. May be repeated for credit. *Open to majors; nonmajors with permission of instructor.*

199. Directed Research/Creative Project

Tutorial work in studio art or art history. *By permission of the chair of the Art Department and the instructor.*

ART HISTORY

Note: For courses that charge fees, see the Undergraduate Schedule of Classes.

11. Western Culture: Art History I

Survey of art and architecture of the ancient and medieval worlds. Interdisciplinary emphasis.

12. Western Culture: Art History II

Survey of the painting, sculpture, and architecture of the period from the Renaissance through the Baroque. Interdisciplinary emphasis.

13. Western Culture: Art History III

Survey of painting, sculpture, and architecture from the 18th century to the present. Interdisciplinary emphasis.

60. Arts of Africa, Oceania, and the Americas

A comparative study of arts of selected cultures that developed outside the spheres of the major European and Asian civilizations. Emphasis on the function of the arts in these disparate geographic regions.

97. Special Projects

For lower-division students who want to do an art project not covered in the catalog. Under the direction of a member of the Art Department faculty. Group meetings with the teacher to discuss progress. May be repeated for credit. *Open to majors; nonmajors with permission of instructor.*

160. Arts of Asia

Using slide presentations, this lecture course introduces students to the main trends of art developed in the past 6,000 years in Asian countries, emphasizing the arts of China and Japan.

170. Greek Art

An examination of Greek art from the Geometric through the Hellenistic periods. Developments in architecture, sculpture, vase painting, and wall painting addressed in their cultural context. Lecture course.

171. Roman Art

A chronological survey of artistic development in Republican and Imperial Rome. Related issues include the influence of Etruscan and Greek art, the impact of political ideology on public programs, and the effect of improved materials on building design. Lecture course.

172. Early Christian and Byzantine Art

A survey of Christian art and architecture from the catacombs in Rome through the early 14th century in Byzantium. Highlights include the Constantinian monuments of Rome, Justinianic Ravenna and Constantinople, iconoclasm, and the Macedonian "Renaissance." Lecture course. (Also listed as History 112.)

173. Early Medieval Art

A comprehensive survey of art and architecture in Western Europe from the early Middle Ages to circa A.D. 1000. Hiberno-Saxon, Carolingian, and Ottonian art discussed in their respective political, intellectual, and cultural contexts. Lecture course.

174. Romanesque and Gothic Art

A study of religious art and architecture in Western Europe from the 11th through the 14th centuries. Comprehensive survey of the high Middle Ages considers structural form, technique, sculptural programs, and related minor arts. Lecture course.

175. Early Renaissance Art

Painting, sculpture, and architecture in Italy from the late 13th to the late 15th century. Emphasis on the foundations and first flowering of the Renaissance style in its cultural context, with particular attention to Florence and Siena. Lecture course.

176. High Renaissance and Mannerist Art

Painting, sculpture, and architecture in Italy in the 16th century. Emphasis on the mature elaboration and manipulation of the Renaissance style, with particular attention to Florence, Rome, and Venice. Lecture course.

177. Northern Art in the Renaissance Period

The visual arts in Northern Europe from the late 14th through the 16th century, with particular attention to Flanders, Germany, and France. Lecture course.

178. Baroque Art

Painting, sculpture, and architecture throughout Europe from the late 16th through the early 18th century. Particular emphasis on Italy, Spain, Flanders, Holland, and France. Lecture course.

181. American Art

Rise and development of an American expression in the arts. Study of examples of American painting, sculpture, and architecture with a view toward arriving at a broadened understanding of the forces that shaped the specific American point of view in the visual arts. Lecture course.

183. 19th-Century Art: 1780–1880

Neoclassicism, Romanticism, and Realism in the context of 19th-century culture in Europe and America. Survey of painting, sculpture, and architecture in this period. Lecture course.

184. Early Modern Art

Analysis of Post-Impressionism, Cubism, Expressionism, Surrealism, and other important early modernist movements. Painting, sculpture, and architecture relative to major historical trends up to World War II. Lecture course.

185. Contemporary Art: 1940–Present

Survey of contemporary developments in the arts from the events leading up to Abstract Expressionism to the present, including photography, performance, and the more traditional arts of painting, sculpture, and architecture. Lecture course with field trips.

188. History of Modern Architecture

Survey of Western architecture. Evolution of modern buildings from roots in the 19th century to Post-Modernism. In-depth study of major monuments and significant architects. Lecture course.

189. History of Women Artists ‡

An attempt to balance the customary approaches in the history of art with an overview of the contributions of women artists to the ongoing historical development of Western visual productions. Lecture course.

190. Museum Studies

Practicum in the varied aspects of museum work. Field trips and guest lecturers from Bay Area museums. *Prerequisite: permission of instructor.*

196. Art History Seminar

Highly recommended for junior and senior art history majors and minors. Origins of the discipline and its current methodologies. Techniques for more effective research, analysis, writing, and oral presentation via selected topics. Practical issues involved in the transition from college to art history–related careers.

197. Special Projects

For advanced students who want to do an art project not covered by the courses in the catalog. Under the direction of a member of the Art Department faculty. Group meetings to discuss progress with one another and with the teacher. May be repeated for credit. *Open to majors; nonmajors with permission of instructor.*

199. Directed Research/Creative Project

Tutorial work in studio art or art history. *Prerequisite: permission of the chair of the Art Department and the instructor.*

‡ Course included in Women's Studies Program

DEPARTMENT OF BIOLOGY

Professor Emeritus: Thomas N. Fast
Professors: William R. Eisinger, John S. Mooring, Dennis R. Parnell, S.J. *(Chair)*
Associate Professors: Janice Edgerly-Rooks, James L. Grainger, David L. Tauck
Assistant Professors: Elizabeth P. Dahlhoff, Carolyn G. Bellinger-Kawahara, Leilani M. Miller, Craig M. Stephens, Andrew D. Thompson Jr.
Lecturer: Warren G. Gold
Clare Booth Luce Professor: Leilani M. Miller

The Department of Biology offers a program leading to the Bachelor of Science degree. Most courses emphasize laboratory work. In addition, the faculty encourage students to assist them in their own research. The major provides students a broad background in biology that serves as a strong foundation for graduate, medical, or professional studies as well as for careers in teaching, research, or business. The department also offers courses of general interest to all University students who are curious about the nature of living things. A minor in biology is also available.

REQUIREMENTS FOR MAJOR

In addition to completing the University Core Curriculum and College requirements for the Bachelor of Science degree, students majoring in biology must complete the following departmental requirements:

1. Biology core series: Biology 91 (Populations), 92 (Physiology), and 93 (Cells)
2. A minimum of seven upper-division biology courses, at least five of which must have a laboratory. (At least one upper-division course in each of the following categories: plant, animal, population, and cell. A single course may not be used to satisfy the requirement in more than one category. See departmental listings to determine which category [or categories] a particular course fulfills.)
3. Chemistry 5, 6, 35, and 36
4. Physics 20, 21, and 22 (General Physics I, II, and III) or Physics 4, 5, and 6 (Physics for Scientists and Engineers I, II, and III).
5. Mathematics 11 and 12. Math 9 is a suitable introduction to Math 11 for students preparing for calculus.

RECOMMENDATIONS FOR MAJOR

In addition to the courses in 1–5 above, the following courses may be required for admission to graduate or professional schools and, with 3 and 5 above, provide a more thorough foundation in mathematics and chemistry.

1. Chemistry 10 and 37
2. Mathematics 8 and 13
3. Upper-division chemistry courses, such as Chemistry 141 (Biochemistry I), Chemistry 150 (Physical Chemistry for the Life Sciences), or others

It is also recommended that students take a biology course chosen from courses 1–89 before starting the biology core courses (i.e., Biology 91, 92, and 93).

REQUIREMENTS FOR MINOR

The following two minors are offered:

Program I (for students interested in environmental biology) Two biology courses from 1–89; Biology 91 (Populations) and 92 (Physiology); Chemistry 5, 6, and 35; three upper-division biology courses at least two of which have a laboratory. Suitable courses include 132 (Field Botany), 133 (Ecology of California Plant Communities), 156 (General Ecology), 165 (Animal Behavior), 167 (Ornithology), 173 (Evolution), and others with approval of instructor.

Program II (for students interested in biochemistry) One biology course from 1–89; Biology 91, 92, and 93 (Populations, Physiology, and Cells); Chemistry 5, 6, 35, and 36; three upper-division biology courses, at least two of which must have a laboratory. Any upper-division biology course for majors is suitable, as determined by the student in consultation with his/her adviser.

PREPARATION IN BIOLOGY FOR ADMISSION TO TEACHING CREDENTIAL PROGRAMS

Coordinator: William R. Eisinger

The state of California requires that students seeking a credential to teach biology in California secondary schools either pass a subject-area examination in combined sciences with a biology emphasis or complete the state-approved Subject-Matter Preparation Program in combined sciences with a biology emphasis. The credential itself requires a fifth year of study and student teaching.

The Biology Department is working on a course of study that satisfies the requirements for the state of California Subject-Matter Preparation Program in combined sciences with a biology emphasis. The program will be similar to the biology major, with some modifications. General requirements include courses in general biology, chemistry, organic chemistry, physics, and mathematics. In addition, students must take upper-division biology courses in genetics, physiology, development, microbiology, and field biology. Education 98/198B is a recommended elective.

Students interested in the Subject-Matter Preparation Program should consult the chair of the Biology Department at an early date.

The Subject-Matter Program in combined sciences with a biology emphasis is presently being revised. For further information about this change, please contact the Biology Department chair.

CLAD Emphasis

Nearly one-third of the total school population of California is composed of students with limited proficiency in English, and more than half are culturally and ethnically diverse. In order to meet the challenge of teaching such a diverse student population, the California Commission on Teacher Credentialing is requiring special training and support for anyone interested in teaching in California public schools. The Division of Counseling Psychology and Education now offers such preparation through the Cross-Cultural, Language, and Academic Development (CLAD) emphasis, in conjunction with the fifth-year credential program. This emphasis requires 9 quarter units of college-level language acquisition, as well as course work at both the graduate and undergraduate level. For courses that meet the undergraduate prerequisite requirements, contact the pre-teaching programs coordinator, Nedra Shunk, Liberal Studies Program.

RESEARCH OPPORTUNITIES

Students are encouraged to participate in original research as part of their undergraduate training. Most faculty involve students in their research; opportunities also exist at neighboring institutions. Qualified students can obtain course credit for research by enrolling in Biology 198.

LOWER-DIVISION COURSES

Note: For courses that charge fees, see the Undergraduate Schedule of Classes.

9. Human Biology

Introduction to basic cell biology, functional anatomy, and physiology, with focus on how each organ system contributes to homeostasis. Consideration of several pathological conditions as well as the scientific basis of selected current issues in health and disease.

43. Human Ecology

Examination of the relationship between humans and their environment. Resource depletion, energy requirements, pollution, food production, and population problems.

44. Endangered Ecosystems

Examination of the scientific, social, political, economic, and ethical issues surrounding the preservation or exploitation of endangered ecosystems such as tropical rain forests, arctic tundra, wetlands, old-growth temperate-zone forests, and coral reefs.

80. Introduction to Marine Science

Biology of the marine environment. Survey of marine organisms and their adaptations to various habitats. Physical and chemical factors in oceanography. Marine ecology.

82. Principles of Human Heredity

Human genetics. Introduction to human reproductive physiology and embryology. Discussion of current techniques in reproductive and genetic manipulation and the social issues that they raise. Designed for majors at the lower-division level or any nonmajor.

85. Human Disease/Human Health

Examination of health and disease of the human organism. Topics include what constitutes health, natural defense mechanisms, the immune system and its role in disease prevention, major diseases and their causes, and community health.

Designed for lower-division majors or nonmajors with little or no experience in science or mathematics.

89. Genetics, Evolution, and Humankind

Introductory survey of the key discoveries and principles that have shaped and advanced the modern theory of organic evolution. Examines the role of this theory in the development of the present understanding of the origin of the human species. Also considers controversies surrounding the theory of evolution as well as the future evolution of humankind.

91. Populations

Examination of evolution, ecology, and biodiversity. Discussion of the origin of life and the evolution of the major groups of organisms. Topics include natural selection, community ecology, and ecosystems. Laboratory 30 hours. Offered only in spring quarter. *Prerequisite: Chemistry 6 (may be taken concurrently). Recommended: one biology course numbered 1–89.*

92. Physiology

An introduction to common themes in plant and animal physiology. Emphasis on the individual organism. A discussion of control theory and biologic control systems. Exploration of the mechanisms of transport, gas exchange, and water balance in plants and animals, as well as plant diversity using specific examples of adaptations. Emphasis on the integration of physiologic functions as a means of maintaining homeostasis even under harsh environmental conditions. Laboratory 30 hours. Offered only in fall quarter. *Prerequisites: Chemistry 35 (may be taken concurrently) and Biology 91 with a grade of C– or better. Recommended: one biology course numbered 1–89.*

93. Cells

An introduction to the cell and molecular fundamentals necessary for all life. The functional organization of the cell. Other topics include membrane structure and function, exchange of materials across membranes, metabolism and bioenergetics, the cell cycle, genetics, and molecular biology. Emphasis on the common molecular events involved in the maintenance of life. Laboratory 30 hours. Offered only in winter quarter. *Prerequisites: Chemistry 36 (may be taken concurrently) and Biology 92 with a grade of C– or better.*

99. Special Topics

Investigation of a specific area or topic in the biological sciences. Open to majors and nonmajors.

UPPER-DIVISION COURSES

Note: For courses that charge fees, see the Undergraduate Schedule of Classes.

101. Vertebrate Anatomy

Comparative structure, organization, adaptation, and classification of vertebrates. Laboratory 60 hours. *Prerequisites: Biology 91, 92, and 93 or equivalent.*

107. Histology and Cytology

Cells, basic tissue types, structure, and histogenesis. Basic histological techniques. Laboratory 60 hours. *Prerequisites: Biology 91, 92, and 93 or equivalent.*

110. Genetics

Basic principles governing inheritance and gene expression in viruses, prokaryotes, and eukaryotes. Emphasis on molecular aspects. Laboratory 30 hours. *Prerequisite: Biology 93.*

112. Pathogenic Microbiology

Study of disease-producing bacteria, rickettsiae, and fungi. Emphasis on specific and nonspecific host-defense mechanisms, identification, pathogenesis, epi-

demiology and control, and community health issues. Laboratory 30 hours. *Prerequisite: Biology 93. Recommended: Biology 113.*

113. Microbiology

Characteristics of microorganisms: bacteria, fungi, viruses, rickettsiae. Emphasis on biochemical taxonomy and microbial physiology. Laboratory 30 hours. *Prerequisite: Biology 93 or permission of instructor.*

114. Immunology

Principles, mechanisms, and techniques of humoral and cellular aspects of the immune response. Immediate and delayed hypersensitivity, tissue transplantation, tumor immunology, and immunodeficient states in humans. Laboratory 30 hours. *Prerequisite: Biology 93 or permission of instructor.*

115. Animal Development

Experimental and anatomical analysis of vertebrate development. Emphasis on cellular and molecular mechanisms that control morphogenesis, differentiation, and growth. Laboratory 30 hours. *Prerequisite: Biology 93. Recommended: Biology 110.*

124. Animal Physiology

Examination of the physical and chemical basis of animal life, focusing on the control mechanisms of selected major organ systems. Laboratory 30 hours; focuses on aspects of human physiology including several computer-assisted studies. *Prerequisite: Biology 93.*

125. Plant Physiology

Physiological processes of plants. Emphasis on current research in the field. Laboratory 30 hours. *Prerequisite: Biology 93.*

128. Plant Development

Study of plant development. Emphasis on the experimental approach and current research. Laboratory 30 hours. *Prerequisite: Biology 93.*

130. Economic Botany

Critical analysis of plant food production potentials with special consideration of modern approaches to pest control and crop improvement including biotechnology. Required field trips. *Prerequisite: Biology 93.* NCX†

132. Field Botany

Field study of vascular plants, especially the seed plants of California; their identification, distribution, and ecology. Laboratory 60 hours. *Prerequisite: Biology 91.*

133. Ecology of California Plant Communities

California plant communities and the factors that determine their distribution. Laboratory and field work 30 hours. *Prerequisite: Biology 91.*

145. Virology

Study of viruses: their structure and classification, experimental cultivation, quantitation, classes of viral replication, and viral pathogenesis and disease. No laboratory component. *Prerequisite: Biology 93. Recommended: Chemistry 141.*

156. General Ecology

Quantitative study of the interrelationships of organisms with their biotic and abiotic environments. Emphasis on population dynamics, interspecific relationships, community structure, and ecosystem processes. Laboratory and field work 30 hours, including one weekend field trip. *Prerequisites: Biology 91 and Math 7 or 11.*

157. Environmental Biology in the Tropics

See Environmental Studies 141.

158. Biology of Insects

An introduction to basic and applied aspects of insect biology, with emphasis on evolution, morphology, physiology, and behaviour of insects and related arthropods. Also includes a review of important

† Exempted from challenge

agricultural, medical, forestry, and veterinary pests. Laboratory 30 hours. *Prerequisite: Biology 91.*

165. Animal Behavior

Examination of the behavior of animals in nature using an organizational scheme that recognizes proximate, or immediate, causes of behavior and evolutionary bases for behavior. Topics include physiological correlates of behavior, perception of natural stimuli (light, sound, chemicals); and behavioral ecology of foraging, mating systems, parent-offspring relationships, and social behavior. Laboratory 30 hours. *Prerequisite: Biology 91.*

167. Ornithology

Emphasis on the evolution, morphology, and behavior of birds. Required field trips. Laboratory 30 hours. *Prerequisite: Biology 91.*

173. Evolution

Examination of the concepts and critical issues concerning organic evolution, including the origins and maintenance of biological diversity, punctuated equilibrium theory, sociobiology, and molecular evolution. *Prerequisite: Biology 93. Recommended: Biology 110.*

174. Cell Biology

Study of the function and assembly of cellular organelles and the signal pathways that control cellular proliferation. *Prerequisite: Biology 93.*

175. Molecular Biology

An introduction to the molecular events involved in the replication and decoding of the genetic material. Lectures focus on basic molecular biology concepts and recombinant DNA technology. Laboratory 30 hours. *Prerequisite: Biology 93.*

187. Biology of Aging

Analysis of the human aging process. The biological, medical, social, and ethical issues associated with aging in America. Topics include theories of aging, cancer, osteoporosis, sexuality, health-care costs, and death. *Open to all students. Does not count toward a major or minor in biology.*

189. Topics in Developmental and Cell Biology

This seminar course deals with current journal articles in cell and developmental biology. Students required to lead discussions and participate in the critical analysis of these articles. *Prerequisites: Completion or concurrent enrollment in Genetics (Biology 110), Animal Development (Biology 115), Cell Biology (Biology 174) or Molecular Biology (Biology 175).* Students who have completed Biology 93 are welcome to attend and participate in the discussion of these topics but may not take the course for credit until they have completed one of the prerequisites.

190A, B. Contemporary Issues in Biology

Specialized treatment of some aspect of biology of current interest to the biologist as well as to society in general. *Prerequisites will be specified according to topic.* NCX†

198. Internship and Undergraduate Research

Students wishing to take either 198A or 198B should have a GPA of 3.0 or better in biology and must present an outline of their projected research to the chair not later than the fifth week of the term preceding the start of the project. (2–5 units)

198A. Internship

Research in off-campus programs under the direct guidance of cooperating research scientists and faculty advisers.

198B. Undergraduate Laboratory Research

Supervised laboratory research culminating in a written report suitable for publication. Sustained for one year with credit given for one term. *Prerequisite: departmental and University permission.* NCX†

† Exempted from challenge

199. Directed Reading and Research
Detailed investigation of a specific topic in biology under the close direction of a faculty member. Students wishing to take this course should have a GPA of 3.0 or better in biology and must present an outline of their projected research to the department chair not later than the fifth week of the term preceding the start of the project, which will continue for one term only. *Prerequisite: departmental and University permission.* NCX†

DEPARTMENT OF CHEMISTRY

Professors Emeriti: Robert J. Pfeiffer, William F. Sheehan
Professors: Patrick E. Hoggard, Lawrence C. Nathan *(Chair),* W. Atom Yee
Associate Professors: Linda S. Brunauer, Lois C. Rosenthal, Amy M. Shachter, Michael A. Sweeney
Assistant Professors: Brian J. McNelis, John D. Thoburn
Senior Lecturer: Steven L. Fedder
Fletcher Jones Professor: Patrick E. Hoggard
Lecturers: Michael R. Carrasco, José Pugar, Elisabeth A. Wade, Tish A. Young

The Department of Chemistry offers three baccalaureate degrees. The Bachelor of Science in Chemistry program prepares students for further work in chemistry, either in graduate school or as professional chemists. This program is approved and certified by the American Chemical Society. The Bachelor of Science with a Major in Chemistry prepares students for a career in medicine, dentistry, law, chemical engineering, business, teaching, or related fields. The Bachelor of Arts in Chemistry also prepares students for a variety of careers, but in the context of a liberal arts program with chemistry at its core. Each of these specialties requires different supporting courses. Suggested curricula have been prepared by the department. A minor in chemistry is also available.

REQUIREMENTS FOR MAJOR AND MINOR

Students majoring in chemistry must complete the University Core Curriculum and College requirements for the Bachelor of Science or the Bachelor of Arts. In addition to these general requirements, the specific departmental programs for each degree are presented below.

Bachelor of Science in Chemistry (Certified)

This four-year curriculum provides graduates with the background necessary to begin a career in chemistry at industrial and governmental laboratories or for admission to institutions offering advanced degrees in chemistry. The American Chemical Society certifies that this degree meets all its recommended professional standards for chemists.

† Exempted from challenge

1. Chemistry
   a. Lower-division core: Chemistry 5, 6, 9, 10, 35, 36, 37
   b. Upper-division core: Chemistry 101, 111, 112, 120, 130, 151, 152, 153
   c. One upper-division chemistry elective. (For breadth of program, Chemistry 141 is strongly recommended.)
   d. Research methods: Chemistry 181, 3 units of 182, oral presentation, and written thesis
2. Supporting courses
   a. Mathematics 11, 12, 13 (Calculus and Analytic Geometry I, II, and III); (Mathematics 21 [Calculus and Analytic Geometry IV] recommended)
   b. Physics 4, 5, 6 (Physics for Scientists and Engineers I, II, and III)

A certified degree with a biochemistry emphasis is also available. The biochemistry requirements are the same as the certified, with three exceptions: Chemistry 141 is specifically required as the upper-division elective, Chemistry 153 is replaced by Chemistry 142 and 143, and three biology courses are required: Biology 91 (Populations), 92 (Physiology), and 93 (Cells).

Bachelor of Science with a Major in Chemistry

This four-year program provides a liberal scientific degree suitable for those planning careers associated with chemistry, including health-related sciences, environmental or patent law, business, and others. Several specialized tracks are possible within this program.

1. Chemistry
   a. Lower-division core: Chemistry 5, 6, 9, 10, 35, 36, 37
   b. Upper-division core: Chemistry 111, 120, 151, 152
   c. Four additional upper-division courses as follows depending on the desired emphasis:
      i. Standard program
         (1) Four from Chemistry 101, 112, 130, 141, 142, 153, 191, 192
         (2) Selections must be made such that a minimum of 60 hours of laboratory is included. Chemistry 182 may be used to contribute laboratory hours (1 unit = 30 hours, 2 units = 60 hours). Chemistry 143 also will satisfy this lab requirement.
      ii. Biochemistry/organic emphasis
         (1) Chemistry 130, 141, 142/143
         (2) One from Chemistry 191, 192; or one from Biology 110, 114, 115, 174, 175
      iii. Physical/inorganic/analytical emphasis
         (1) Chemistry 101, 112, 153
         (2) One from Chemistry 130, 191, 192, or Physics 116
   d. Research methods: Chemistry 181
2. Supporting courses
   a. Mathematics 11, 12, 13 (Calculus and Analytic Geometry I, II, and III)
   b. Physics 4, 5, 6 (Physics for Scientists and Engineers I, II, and III); or Physics 20, 21, 22 (General Physics I, II, and III)

Bachelor of Arts in Chemistry

This four-year course of study allows students the most freedom in choosing electives, especially in areas other than science. It is designed for students with a strong interest in the liberal arts. It is also an excellent program for pre-medical students.

1. Chemistry
   a. Lower-division core: Chemistry 5, 6, 9, 10, 35, 36, 37
   b. Upper-division core: Chemistry 111, 151, 152
   c. Two additional upper-division chemistry electives
   d. Research methods: Chemistry 181 and 1 unit of Chemistry 199
2. Supporting courses
   a. Mathematics 11, 12, 13 (Calculus and Analytic Geometry I, II, and III)
   b. Physics 4, 5, 6 (Physics for Scientists and Engineers I, II, and III); or Physics 20, 21, 22 (General Physics I, II, and III)

Minor in Chemistry

The minor in chemistry requires completion of Chemistry 5, 6, 10, 35, 36, and 37 and three upper-division courses, including one in physical chemistry (150 or 151) and one with a laboratory (101, 130, 151, or the combination of Chemistry 142 and 143). Chemistry 120 may not be used as one of the three upper-division courses.

SUBJECT-MATTER PREPARATION PROGRAM

Coordinator: Steven L. Fedder

The state of California requires that persons seeking a credential to teach chemistry and other physical sciences in California secondary schools, besides completing a fifth year of studies and student teaching, either pass a state-approved examination in combined sciences or complete the state-approved Subject-Matter Preparation Program in combined sciences. The program requires the same courses as the chemistry major (standard B.S. or ACS-certified B.S. degree) and successful completion of Physics 3 (Introduction to Astronomy) and 51 (Introduction to Earth Science). Education 98/198B is a recommended elective.

For further details, consult Dr. Steven L. Fedder, program director in the Chemistry Department, at an early date.

The Subject-Matter Program in combined sciences is presently being revised. For further information about this change, please contact Dr. Fedder.

CLAD Emphasis

Nearly one-third of the total school population of California is composed of students with limited proficiency in English, and more than half are culturally and ethnically diverse. In order to meet the challenge of teaching such a diverse student population, the California Commission on Teacher Credentialing is requiring special training and support for anyone interested in teaching in California

public schools. The Division of Counseling Psychology and Education now offers such preparation through the Cross-Cultural, Language, and Academic Development (CLAD) emphasis, in conjunction with the fifth-year credential program. This emphasis requires 9 quarter units of college-level language acquisition, as well as course work at both the graduate and undergraduate level. For courses that meet the undergraduate prerequisite requirements, contact the pre-teaching programs coordinator, Nedra Shunk, Liberal Studies Program.

LOWER-DIVISION COURSES

Note: A laboratory fee is required for each laboratory course. In addition, breakage charges will be assessed after each course has been completed.

1. Chemistry and the Environment

Basic chemical concepts related to environmental issues such as global warming, acid rain, ozone depletion, waste and resource management. For the nonscience student. (4 units) NCX†

2. Chemistry in the Modern World

Various applications of chemistry in today's world. Possible course offerings include Chemistry in Modern Society, Chemistry in the Natural World, Chemistry and the Health Sciences, Chemical Origins of Life, Understanding Hazardous Materials, Geochemistry, and perhaps others that may be offered occasionally. For the nonscience student. (4 units) NCX†

5. General Chemistry I

Atomic structure. Periodic properties and the periodic table. Nomenclature. Chemical bonding. Molecular structure. Chemical equations and stoichiometric relationships. Properties of gases, liquids, and solids. Oxidation and reduction. Laboratory 3 hrs/wk. *Prerequisites: high school chemistry, physics, algebra, geometry, and trigonometry.* (5 units) NCX†

6. General Chemistry II

Solutions. Chemical thermodynamics. Chemical kinetics. Equilibrium. Acids and bases. Ionic equilibria. Electrochemistry. Selected topics in descriptive and applied chemistry. Laboratory 3 hrs/wk. *Prerequisite: Chemistry 5 with a grade of C– or better.* (5 units) NCX†

9. Inorganic Chemistry

Detailed description of the chemical properties of the representative metals, transition metals, nonmetals, and noble gases. Crystal structure. Introduction to the chemical literature. Laboratory 3 hrs/wk. *Prerequisite: Chemistry 6 with a grade of C– or better.* (5 units) NCX†

10. Quantitative Analysis

Introduction to the theories and practice of acid-base, oxidation-reduction, precipitation, potentiometric, and spectrophotometric analyses. Laboratory 4 hrs/wk. *Prerequisite: Chemistry 6 with a grade of C– or better.* (5 units) NCX†

30. Environmental Applications in Organic Chemistry

A broad overview of organic chemistry with special emphasis on environmental applications, including ozone depletion, groundwater pollution, petroleum resources, and pesticide use. Viewed on a foundation of the naming, properties, and reactivity of families of organic compounds. For nonmajors who do not plan to take additional organic chemistry courses. Laboratory 3 hrs/wk. Not offered each year. *Prerequisite: Chemistry 5 or permission of instructor.* (5 units) NCX†

†Exempted from challenge

35. Organic Chemistry I

Basic concepts of bonding and structure in organic compounds, stereochemistry. Nomenclature. Physical and chemical properties of alkanes, alkenes, alkynes, and alkyl halides. Introduction to reaction mechanisms. Laboratory 3 hrs/wk. *Prerequisite: Chemistry 6 with a grade of C– or better.* (5 units) NCX†

36. Organic Chemistry II

Details of nucleophilic substitution and elimination reactions. Spectroscopic methods of structure determination. Nature and reactions of aromatic compounds and other conjugated pi systems. Chemistry of ethers, epoxides, and alcohols. Laboratory 3 hrs/wk. *Prerequisite: Chemistry 35 with a grade of C– or better.* (5 units) NCX†

37. Organic Chemistry III

Aldehyde, ketone, amine, phenol, and carboxylic acid chemistry. Carbonyl condensation reactions. Carbohydrate, protein, and synthetic polymer chemistry. Special topics. Laboratory 3 hrs/wk. *Prerequisite: Chemistry 36 with a grade of C– or better.* (5 units) NCX†

99. Independent Laboratory

A 1-unit laboratory course primarily for transfer students to make up lower-division laboratory as needed for equivalency with Chemistry 5, 6, 9, 10, 35, 36, and/or 37. May be repeated for credit. 3 hrs/wk. *Prerequisite: approval of department chair.* (1 unit) NCX†

UPPER-DIVISION COURSES

Note: A laboratory fee is required for each laboratory course. In addition, breakage charges will be assessed after each course has been completed.

101. Advanced Inorganic Chemistry

Aspects of atomic structure. Theories of chemical bonding and molecular geometry. Applications of symmetry and group theory. Coordination chemistry. Introduction to organometallic chemistry. Inorganic reactions and mechanisms. Laboratory 3 hrs/wk. *Prerequisite: Chemistry 150 or 151.* (5 units) NCX†

111. Instrumental Methods of Analysis I

Principles and use of instruments. Basic spectroscopic methods: ultraviolet-visible, infrared, atomic absorption, nuclear magnetic resonance, and mass spectroscopies. Basic chromatographic methods: gas and high-performance liquid chromatography. Laboratory 3 hrs/wk. *Prerequisite: Chemistry 152.* (5 units) NCX†

112. Instrumental Methods of Analysis II

Advanced spectroscopic methods. Selected electrochemical and thermoanalytical methods. X-ray diffraction. Laboratory 3 hrs/wk. *Prerequisites: Chemistry 101, 111, and 120; Chemistry 153 recommended.* (5 units) NCX†

120. Computer Applications in Chemistry

Introduction to BASIC programming. Use of PC and VAX computing environments. Chemical applications including data acquisition, data analysis, and molecular modeling. *Prerequisites: Chemistry 10 and 37.* (5 units) NCX†

130. Organic Syntheses

Modern synthetic methods applied to the preparation of a varied assortment of compounds. Discussion of retrosynthetic concepts, including synthons and chirons, with emphasis on syntheses taken from

†Exempted from challenge

the literature. Laboratory work includes micro- and macroapplications. Laboratory 4 hrs/wk. *Prerequisite: Chemistry 37.* (5 units) NCX†

141. Biochemistry I

Chemical principles as applied to biomolecules. Protein structure, enzyme function and regulation, chemical models for enzymes. Carbohydrate structure and metabolism, biological redox. Lipid structure and membrane organization. *Prerequisite: Chemistry 37.* (5 units) NCX†

142. Biochemistry II

Continuation of 141. Metabolic pathways of carbohydrates, lipids, and amino acids. Nucleic acid structure and function. Protein synthesis and subcellular sorting. Membrane biochemistry and signal transduction; hormone action. *Prerequisite: Chemistry 141.* (5 units) NCX†

143. Biochemical Techniques

A laboratory course emphasizing fundamental theory and practice in biochemical laboratory techniques including preparation and handling of reagents; isolation, purification, and characterization of biomolecules; enzyme kinetics; spectrophotometric assays; electrophoretic and immunological techniques. Laboratory 6 hrs/wk. *Prerequisites: Chemistry 10, 142 (may be taken concurrently), and either Chemistry 150 or 151, or permission of instructor.* (2 units) NCX†

150. Physical Chemistry for the Life Sciences

Principles of chemical thermodynamics with applications to biological systems. Laws of thermodynamics. Electrochemistry. Biological oxidations. Thermodynamics of solutions. Transport properties of macromolecules. Survey of spectroscopy. Intended for students majoring in the biological sciences. Does not count toward a major in chemistry. *Prerequisites: Chemistry 36 and Math 11.* (5 units) NCX†

151. Physical Chemistry I

Fundamentals of chemical thermodynamics: energy, entropy, and Gibbs free energy. Equilibrium. Kinetic theory of gases. Electrochemistry. Laboratory 4 hrs/wk. *Prerequisites: Chemistry 10 and 36, Math 13, and Physics 6 or 22.* (5 units) NCX†

152. Physical Chemistry II

Fundamentals of chemical kinetics and reaction mechanisms. Introduction to quantum mechanics and spectroscopy: wavefunctions and probability; rotational, vibrational, and electronic transitions. Laboratory 4 hrs/wk. *Prerequisite: Chemistry 151.* (5 units) NCX†

153. Physical Chemistry III

Continued study of quantum mechanics and spectroscopy: atomic and molecular electronic structure, normal vibrations, magnetic resonance, lasers. Laboratory 4 hrs/wk. *Prerequisite: Chemistry 152; concurrent enrollment in Chemistry 101 is strongly recommended.* (5 units) NCX†

181. Use of Chemistry Literature

Introduction to library resources in chemistry, including computerized databases. Written and oral reports. *Prerequisites: Chemistry 10 and 37.* (2 units) NCX†

182. Undergraduate Research

Execution of experimental or theoretical research. Three hours/week of work per unit of credit. Oral presentation and written report constitute a portion of the third unit. Regular attendance at seminars. May be repeated for credit. *Prerequisite: consent of instructor; Chemistry 181 recommended.* (1–3 units) NCX†

191. Special Topics in Organic Chemistry

Advanced topics in selected areas of organic chemistry. Common offerings include:

Physical Organic Chemistry

Emphasis on methods of elucidating organic reaction mechanisms. Structure/

†Exempted from challenge

reactivity relationships. Polar and free-radical mechanisms. Molecular orbital theory and its application to pericyclic and photochemical reactions. *Prerequisites: Chemistry 37 and 150 or 151.*

Natural Products

Synthesis, biosynthesis, and structure determination of acetogenins, isoprenoids, and alkaloids. Emphasis on reaction mechanisms and stereochemistry. *Prerequisite: Chemistry 37.*

Others

Other topics may be offered occasionally. May be repeated for credit if topics differ. *Prerequisites depend on the specific offering.* (5 units) NCX†

192. Special Topics in Physical/ Inorganic/Analytical Chemistry

Advanced topics in selected areas of physical, inorganic, or analytical chemistry. Common offerings include:

Polymer Chemistry

Introduction to chemistry of macromolecules. Emphasis on synthetic polymers. Step-growth and chain-growth mechanisms. Kinetics and thermodynamics of polymerization. Characterization, morphology, fabrication, and testing of polymers. *Prerequisites: Chemistry 37 and 152.*

Nuclear Chemistry and Radiochemistry

Nuclear chemistry: nuclear structure, radioactive decay, nuclear reactions. Radiochemistry: interaction of radiation with matter, detectors, tracers in chemistry. *Prerequisites: Chemistry 150 or 151, or Physics 7 or 22, plus permission of instructor.*

Others

Other topics may be offered occasionally. May be repeated for credit if topics differ. *Prerequisites depend on the specific offering.* (5 units) NCX†

199. Independent Study in Chemistry

Detailed investigation and directed reading on advanced topics, under the close supervision of a faculty member. Permission of the dean, department chair, and instructor must be obtained before registration. May be repeated for credit. (Credit to be arranged.) NCX†

† Exempted from challenge

DEPARTMENT OF CLASSICS

Professor: William J. Prior (courtesy of Philosophy Department)
Associate Professors: William S. Greenwalt, John R. Heath *(Chair)*, Helen E. Moritz
Senior Lecturer: John R. Dunlap

Classics in the broad sense is the study of all aspects of the life and culture of ancient Greece and Rome. The Classics Department offers courses that explore the most important areas of these ancient civilizations and their Mediterranean context: language (ancient Greek and Latin), literature, history, philosophy, mythology, religion, and art.

Most courses in the department are open to any interested student. Classics courses, such as Mythology, Classical Tragedy, Ancient Greek Religion, and Women in Antiquity, require no knowledge of an ancient language. Latin or Greek may be taken to satisfy the secondary language requirement. Because of

the multidisciplinary nature of the field, classics provides an ideal liberal arts curriculum that is an excellent background for careers in many areas.

Majors and minors are available in several programs in the Department of Classics: Ancient Studies, Classical Studies, and Classical Languages and Literatures (Latin or Greek; there is also a major, but no minor, in Latin *and* Greek). Because course offerings in any one term are limited, students wishing a classics major are encouraged to plan their curriculum in consultation with a faculty adviser at the earliest possible date.

ANCIENT STUDIES

This program offers students the opportunity to study, in a comprehensive and multidisciplinary fashion, the cultures of ancient Greece and Rome in the context of other civilizations that arose prior to A.D. 500 near the Mediterranean Sea. Through sources in translation (there is no classical language component to this program), the ancient studies major explores the development, cross-fertilization, and legacies of the sundry cultures of western Asia, northern Africa, and southern Europe, which together shaped many of the fundamental institutions and ideas of the modern world.

Requirements for the Major and Minor in Ancient Studies

The major requires the following courses:

1. Five lower-division courses, distributed as follows:
   a. English 11 (= Classics 61)
   b. History 11 (= Classics 62)
   c. Three additional lower-division courses from the following list (at least one of which must be Art 11, Philosophy 11, or Music/Theatre 11): Art 11; Classics 65, 67, 68; Music/Theatre 11; Philosophy 11; Religious Studies 1, 2, 4, 11, 21, 22, 23, 24, 25, 65
2. Seven upper-division courses from the following list of approved courses. At least one course *must* be taken from three of the four disciplinary perspectives, and three courses *must* be taken within one of these perspectives:
   a. Language and Literature: Classics 175, 180, 181, 182, 184, 185, 186; English 165, 178
   b. Philosophy and Religious Studies: Classics 177; Philosophy 131; Religious Studies 104, 105
   c. Art History, Music/Theatre and Dance: Art 170, 173; Classics 181, 182
   d. History and Political Science: Classics 108, 109, 110, 111, 176, 185, 186, 187; History 107, 112; Political Science 111
3. Senior Seminar

The minor requires the following:

1. English 11, History 11, and any one additional lower-division choice of the student's choosing (see list above, 1c)
2. Four upper-division courses of the student's choosing, with at least two coming from different perspectives as listed above

CLASSICAL LANGUAGES AND LITERATURES

These programs emphasize the study of ancient languages and the literature surviving in those languages and are supported by courses in other aspects of ancient literature and civilization.

Majors who plan to do graduate work in classics should acquire at least a minimal familiarity with both Latin and Greek.

In addition to any lower-division courses in Latin or Greek that the student may require, majors must complete the following courses:

Requirements for Major and Minor

Major in Latin or Greek Nine upper-division courses in the language of concentration and a senior project (Classics 198)

Major in Latin and Greek Nine upper-division courses in the ancient languages, with at least six of these in a single language, and a senior project (Classics 198)

Minors in either Latin or Greek require completion of 20 upper-division units in the language.

Students in these programs are strongly encouraged to fulfill the Western Culture requirement with English 11, 12, 13 (Literature I, II, III).

Recommended Electives

Lower Division Classics 65 (Classical Mythology); History 11 (Ancient); Philosophy 11 (Classical & Medieval); Art 11 (Art History I); Classics 67 (Ancient Greek Religion) or Classics 68 (Ancient Roman Religion)

Upper Division Literature and culture courses in the Classics 170- and 180-series and history courses in Classics 108–111

At least one course in Latin literature (120–139) and one course in Greek literature (150–169) are regularly offered each academic quarter. These courses are cycled in order to ensure majors the opportunity of studying the greatest number of major authors and genres without duplication during their program. Although each of the upper-division courses in Latin and Greek is ordinarily offered at least once in three or four years, listing in the *Undergraduate Bulletin* does not guarantee that a course will be offered in any given year.

CLASSICAL STUDIES

For students interested in the bases of Western civilization, this program offers a broad curriculum in language, literature, history, philosophy, and art unified by a concentration on the classical periods in ancient Greece and Rome. Courses in Latin or Greek language and in classical literature (in the original or in translation) are its core, but the program emphasizes a comprehensive understanding of the foundations of Western culture rather than a single discipline.

Requirements for Major and Minor in Classical Studies

The major requires the following courses:

1. A minimum of *five* courses in Latin or Greek, which may include the elementary sequence (this simultaneously fulfills the second language requirement for the Bachelor of Arts degree). Students entering with prior study of Latin or Greek may substitute up to two courses in classical literature with *advance* approval of the department chair.
2. Additional lower-division requirements: Classics 65 (Classical Mythology); English 11, 12, 13 (Literature I, II, III); History 11 (Ancient); two courses from Philosophy 11 (Classical & Medieval), Art 11 (Art History I), and Classics 67 (Ancient Greek Religion) and Classics 68 (Ancient Roman Religion)
3. Additional upper-division requirements—six courses, distributed as follows:
   a. Two courses in classical literature: at least one from Classics 175, 180, 181, 182, 184; the other from these or from the Classics 120-, 130-, 150-, and 160-series (upper-division Greek and Latin literature)
   b. One course in classical culture from Classics 177, 178, 185, 186, 187, 188; Political Science 111 (History of Political Theory I: Greek and Christian)
   c. One additional course in classical literature or culture
   d. Two courses in ancient history from Classics 108, 109, 110, 111, 176
   e. Classics 198 (Senior Project)

The minor requires the following:

1. Fulfillment of the second language requirement for the Bachelor of Arts in Latin or Greek
2. Classics 65
3. Art 11
4. Classics 61 or English 11
5. History 11 or one upper-division course in ancient history
6. Additional upper-division courses
   a. Two courses in classical literature, in the original or in translation
   b. One course in ancient literature, history, philosophy, or art

Students in the Classical Studies program are encouraged to fulfill the Western Culture requirement with English 11, 12, 13 (Literature I, II, III) and the intermediate religious studies requirement with Religious Studies 95x (Ancient Greek Religion) and 96x (Ancient Roman Religion).

TEACHING AUTHORIZATION IN LATIN

Although Santa Clara University does not have a state-of-California-approved Subject-Matter Preparation Program in Latin, those who already hold a valid single-subject credential in another subject (e.g., English or a modern language) may add supplementary authorization in the teaching of Latin if they have completed

a total of 30 quarter units or 15 upper-division quarter units of college course work in Latin. Students interested in teaching Latin in California public schools should consult with the department chair about their program at the earliest possible date.

LATIN

11, 12. Elementary Latin I, II

Introduction to vocabulary, forms, and grammar of classical Latin. Development of reading skills with supporting exercises in writing. No language laboratory.

13. Elementary Latin III

Completion of Latin grammar. Introduction to reading Latin literature.

31. Latin Grammar Review

Rapid review of Latin grammar. Especially for students wishing to refresh their high school Latin.

121. Caesar

Representative selections from the *Commentarii* on the Gallic War and/or the *Bellum Civile.* Consideration of the adaptation of history to political ends.

122. Catullus

Lyric poems, short epigrams, and longer mythological poems by the late Republican poet of personal love and sophisticated society.

123. Roman Comedy

One or more plays by Plautus or Terence. Origins and nature of Roman comedy.

124. Ovid

Selections from the major works, which include love poems, *Amores;* a handbook for amatory success, *Ars Amatoria;* and the epic compendium of mythology, the *Metamorphoses.*

125. Cicero: Philosophical Works

Consideration of Cicero's eclectic philosophy through a careful reading of one or more of his philosophical dialogues (e.g., *De Amicitia, De Senectute,* or *The Dream of Scipio).*

126. Cicero: Oratory and Rhetoric

One or more exemplars of Cicero's rhetorical style (e.g., Catilinarian Orations, *Pro Archia*) or rhetorical theory (e.g., *De Oratore*). Consideration of rhetorical form, figures, and *topoi.*

127. Vergil: Aeneid

The epic poem on the effort of founding Rome and the cost of its greatness. Consideration of the traditional and innovative features of Vergil's epic style and purpose. Attention to epic meter.

131. Vergil: Eclogues and Georgics

Vergil's earlier works: pastoral poems set in an idealized landscape and the didactic poem on the agriculture and countryside of his native Italy.

132. Horace

Selections from the odes and epodes. Attention to the adaptation of Greek lyric forms and rhythms to the Latin language.

133. Livy

Selections from the *Ab Urbe Condita*— the history of Rome from its semi-mythical founding through monarchy, early Republic, and Punic Wars.

134. Roman Satire

Representative selections from among the works of Horace, Juvenal, and others. Origins and development of the satiric mode in Latin literature.

135. Medieval Latin

Major works of prose and poetry from the fourth century to the Renaissance. St. Augustine's *Confessions;* the histories of Gregory of Tours, Bede, and Einhard; Latin fables; popular songs such as the *Carmina Burana;* and the humanistic writings of Dante and Petrarch.

137, 138. Special Topics: Poetry Special Topics: Prose

Occasional courses in selected authors or genres for advanced students. Possible topics: Lucretius or elegy in poetry; Cicero's letters, Tacitus, or other Roman historians in prose.

GREEK

21, 22. Elementary Greek I, II

Introduction to vocabulary, forms, and grammar of Attic Greek. Development of reading skills with supporting exercises in writing. No language laboratory.

23. Elementary Greek III

Completion of Greek grammar. Introduction to reading Greek literature.

105. Advanced Greek I

Selected aspects of Greek grammar in the context of reading excerpts from Greek prose and poetry. *Prerequisite: Greek 23 or equivalent.*

106. Advanced Greek II

Greek readings comprising an introductory survey of major authors and genres.

151. Lucian

Selections from the author's satirical treatments of mythology, history, philosophy, and rhetoric (e.g., *Dialogues of the Dead*) and/or from the fantasy called *A True Story.* Lucian's place in the Second Sophistic.

152. Homer: Odyssey

Selected passages demonstrating the fusion of the heroic and the romantic in an epic of peacetime. Consideration of epic meter and conventions.

153. Euripides

A complete tragic drama. Attention to characterization, dramatic structure, and poetry, and to Euripides' place in the history of tragedy. Metrical reading of dialogue.

154. Herodotus

Selections from the *Persian Wars.* Herodotus' achievements and limitations as the "Father of History." Peculiarities of the Ionic dialect.

155. Plato

Careful reading from one or more dialogues such as *Apology, Crito, Phaedo,* and *Republic.* Detailed study of dialogue mode of discourse; overview of Plato's philosophy.

156. Greek New Testament

Readings selected from the Koine Greek text of the New Testament with a concentration on the gospels, John, or the epistles. Close reading of the text with a view to theological implications of the vocabulary. Introduction to primary research tools.

161. Homer: Iliad

Selected passages illustrating the course and consequences of the wrath of Achilles and the nature of the hero. Consideration of epic meter and conventions.

162, 163. Sophocles, Aeschylus

A complete tragic drama. Attention to characterization, dramatic structure, and poetry, and to the author's particular contributions to the development of the tragic form. Metrical reading of the text.

164. Oratory

Selections from a representative Greek orator such as Demosthenes or Lysias. Consideration of classical rhetorical forms and *topoi.*

165. Lyric Poetry

Fragments of Alcaeus, Archilochus, Sappho, Simonides, and others. Development of elegiac, iambic, and melic forms.

167, 168. Special Topics: Poetry Special Topics: Prose

Occasional courses in selected authors or genres for advanced students. Possible topics: Hesiod or Pindar in poetry, Thucydides or Xenophon in prose.

CLASSICS

Note: Knowledge of an ancient language is not necessary for the following courses.

50. Technical Terminology

Introduction to technical vocabularies, especially in life sciences, through their roots and origins in Greek and Latin.

51. Greek and Latin Etymology of English

A practical study of the influence of Greek and Latin on the development of the English language. Vocabulary building through the recognition and use of Greek and Latin roots in English combined with theoretical and semantic issues.

61. Survey of Classical Literature

Historically and culturally based survey of major Greek and Latin authors from Homer through St. Augustine. Introduction to the principal literary genres of antiquity, epic, tragedy, comedy, philosophical dialogue, and satire. (Also listed as English 11.)

62. Survey of Ancient History

Interdisciplinary survey of the development of Western culture from the Near Eastern origins of Western civilization through the collapse of the Roman Empire. (Also listed as History 11.)

65. Classical Mythology

Principal gods and heroes of Greek and Roman antiquity: their stories, significance, and pictorial representations. Implications of myth in society and possible origins of myth. Important background for European and English literature. (Also listed as English 65.)

67. Ancient Greek Religion

Consideration of the differing attitudes and expectations of polytheisms and monotheisms and of religious expression in the context of classical Greek cult and ritual. Readings are drawn from a wide variety of literary, historical, philosophical, and epigraphical texts. (Also listed as Religious Studies 95x and History 16.)

68. Ancient Roman Religion

Examination of religious practices, institutions, and beliefs of the ancient Romans. Special consideration of interconnections in Roman religiosity between the acts/beliefs of individuals and the concerns of the state. Concludes with philosophic mysticism, magic, mystery religions, and Christianity. (Also listed as Religious Studies 96x and History 17.)

108. Ancient Greece

A survey of Hellenic history from the Bronze Age to Alexander the Great. Emphasis on the rise and fall of the polis as an independent social, cultural, and political community. (Also listed as History 108.)

109. The Hellenistic Age

A cultural, social, and political review of Alexander the Great's conquests and their Hellenistic ramifications through the reign of Egypt's Cleopatra VII. (Also listed as History 109.)

110. Roman Republic

A political, military, social, and cultural review of the rise and fall of the most successful state the West has ever known. (Also listed as History 110.)

111. Roman Empire

A political, social, and cultural survey of the Roman Empire beginning with Augustus and tracing changes in Rome from the development of the Roman Empire as a world state to the development of Christianity as a world religion. (Also listed as History 111.)

175, 176, 177, 178. Topics in Classical Literature, Ancient History, Ancient Philosophy, Classical Culture

Occasional courses in specialized topics. Consult current course descriptions for details.

180. Classical Epic

The *Iliad* and *Odyssey, Argonautica,* and *Aeneid* in translation. Characteristics and historical development of epic genre and epic hero. (Also listed as English 184B.)

181. Classical Tragedy

Representative works of the principal Greek tragic playwrights: Aeschylus, Sophocles, and Euripides. Features of the tragic genre, its origins, and the conventions of its performance. At the discretion of the instructor, may include satyr drama and/or the Roman tragedy of Seneca. (Also listed as English 110 and Theatre and Dance 110.)

182. Ancient Comedy, Wit, and Humor

An investigation of the various styles of and approaches to humor in the ancient Greek and Roman world, as seen through the genres of comedy, satire, spoof literature, and invective. Besides the works of the comic dramatists (e.g., Aristophanes and Plautus) and satirists (e.g., Petronius and Juvenal), the course considers satyr drama, epigram, and "novellas" such as Lucian's *A True Story* and Apuleius' *Golden Ass.* (Also listed as English 111 and Theatre and Dance 111.)

183. Greek and Roman Historiography

A survey of the origin and development of historical prose from Herodotus through Ammianus Marcellinus. Consideration of history as an artistic genre; special attention to the authors' various political and ideological purposes.

184. Classical Mythology in the Western Tradition

An examination of the manipulation and metamorphosis of Greek myths for artistic and political purposes from the classical period through the 20th century. (Also listed as English 184C.)

185. Women in Ancient Greece‡

Investigation into the representation and the reality of women's lives in ancient Greece, from mythistoric times through the Hellenistic period, from the evidence of literature, history, philosophy, and religion, from legal and documentary texts, and from art. Significance of the status of and views about women in the ancient contexts and for modern times.

186. Women in Ancient Rome‡

Investigation into the representation and the reality of women's lives in ancient Rome, from mythistoric times of the founding of Rome to the advent of Christianity, from the evidence of literature, history, philosophy, and religion, from legal and documentary texts, and from art. Significance of the status of and views about women in the ancient contexts and for modern times.

‡ Course included in Women's Studies Program

187. Family in Antiquity

A survey of family social, economic, political, and religious roles in various ancient Greek states and in Republican and Imperial Rome. (Also listed as History 113.)

188. Art and Architecture of the Classical World

Architecture, sculpture, and painting from the Archaic through the Roman period, with special emphasis on major artists and monuments such as the Parthenon, the Altar of Zeus at Pergamum, Trajan's column; the sculptors Polyclitus and Lysippus; and the painters Parrhasius and Zeuxis and how they reflect artistic developments and classical culture. (Also listed as Art 170.)

198. Senior Project

Directed research project and paper for senior Classics majors.

199. Directed Reading/Research

Individually designed programs of reading or research, in Latin, Greek, or Classics (i.e., literature in translation or culture). Available to advanced students. *Written permission of the instructor and department chair required in advance of registration.*

COMBINED SCIENCES

Program Coordinator: John B. Drahmann (Physics)
Program Council: Carolyn G. Bellinger-Kawahara (Biology), Philip R. Kesten (Physics), Robert Numan (Psychology), Dennis C. Smolarski, S.J. (Mathematics)

The College of Arts and Sciences offers a Bachelor of Science in Combined Sciences for students who wish to include study of both the natural and social sciences in their undergraduate program. The combined sciences major includes extensive study of both areas of science; students emphasize either the natural or social sciences.

The breadth of the combined sciences curriculum is excellent preparation for careers in a number of professional areas, including medicine, dentistry, and other health-related professions; law; business; and teaching.

For the details regarding combined sciences options, consult the program coordinator, John B. Drahmann, Department of Physics.

REQUIREMENTS FOR MAJOR

Students must complete the University Core Curriculum and the requirements of the College of Arts and Sciences. Students choosing the natural science emphasis should complete the core requirements for the Bachelor of Science degree in the natural science area; those choosing the social science emphasis should complete the requirements for the social science area. Students must maintain a C average in the courses specified in their major, which may not be taken pass/not pass.

In addition to the required courses for an emphasis in either natural science or social science, the major in combined sciences must take the following courses:

1. Mathematics 11, 12, and 13 (Calculus and Analytic Geometry I, II, and III)
2. Natural Sciences
   a. Biology 91, 92, and 93 (Populations, Physiology, and Cells)
   b. Chemistry 5 and 6 (General Chemistry I and II)
3. Social Sciences
   a. Economics 1 and 2 (Principles of Economics I and II)
   b. Political Science 1 (Introduction to U.S. Politics)
   c. Psychology 10 (Psychology as a Natural Science) and 11 (Psychology as a Social Science)
   d. Sociology 1 (Principles of Sociology)
4. Seven upper-division courses in the natural and social sciences, one of which must be Sociology 149, 165, or 172

EMPHASIS PROGRAMS

Natural Science Students choosing the emphasis in natural science must also complete Chemistry 35, 36, and 37 (Organic Chemistry I, II, and III) and Physics 4, 5, and 6 (Physics for Scientists and Engineers I, II, and III).

Social Science Students choosing the emphasis in social science must also complete Anthropology 3 (Introduction to Social and Cultural Anthropology); Chemistry 35 and 36 (Organic Chemistry I and II); Physics 20, 21, and 22 (General Physics 20, 21, and 22); and Political Science 2 (Introduction to Comparative Politics).

PREPARATION IN COMBINED SCIENCES FOR ADMISSION TO TEACHING CREDENTIAL PROGRAMS

The state of California requires that students seeking a credential to teach the sciences (biology, chemistry, or physics) in California secondary schools pass a subject-area examination in combined sciences, with an emphasis in either biology, chemistry, or physics. The credential itself requires a fifth year of study and student teaching.

CLAD Emphasis

Nearly one-third of the total school population of California is composed of students with limited proficiency in English, and more than half are culturally and ethnically diverse. In order to meet the challenge of teaching such a diverse student population, the California Commission on Teacher Credentialing is requiring special training and support for anyone interested in teaching in California public schools. The Division of Counseling Psychology and Education now offers such preparation through the Cross-Cultural, Language, and Academic Development (CLAD) emphasis, in conjunction with the fifth-year credential program. This emphasis requires 9 quarter units of college-level language acquisition, as well as course work at both the graduate and undergraduate level. For courses that meet the undergraduate prerequisite requirements, contact the pre-teaching programs coordinator, Nedra Shunk, Liberal Studies Program.

DEPARTMENT OF COMMUNICATION

Professor: Emile G. McAnany *(Chair)*
Associate Professors: Don C. Dodson, Stephen C. Lee, Thomas E. Shanks, S.J., Paul A. Soukup, S.J.
Assistant Professors: Christine M. Bachen, Amy W. Loomis, Laurie A. Mason, Moira M. McLoughlin, Karen E. Strother
Senior Lecturer: John A. Privett, S.J. (on leave)
Lecturer: Gordon Young
Adjunct Lecturer: Melan W. Jaich
Walter E. Schmidt, S.J., Professor: Emile G. McAnany

The Department of Communication offers a program of studies leading to a Bachelor of Arts in Communication. Students select an emphasis in video production, print journalism, or broadcast journalism to complement their core communication courses. The major prepares students for various graduate and professional studies and for careers in the communication industry. An academic minor is also available.

The communication major focuses on the communication *process* in interpersonal and mass media contexts. It explores the theory, research methodologies, responsibilities, institutional structures, and effects of mass and interpersonal communication. The department gives special consideration to new and developing communication technologies.

The major also integrates theory with practice. It allows students to apply their knowledge of the communication process to the study and creation of communication *products* (speeches, television programs, newspaper stories, etc.). Particular attention is given to developing students' ability to create quality communications with a concern for ethics and the common good.

The communication curriculum provides nonmajors with the opportunity to acquire a critical understanding of the communication process and contemporary media, to improve oral and written skills, and to heighten visual awareness.

REQUIREMENTS FOR MAJOR AND MINOR

Arts and Sciences

Students are expected to complete University Core Curriculum and College requirements. In addition, communication majors must complete one statistics course (e.g., Mathematics 8).

Students who choose either journalism emphasis must also complete

1. an introductory political science course (preferably Political Science 1, Introduction to U.S. Politics); and
2. an introductory economics course (preferably Economics 2, Principles of Microeconomics I).

Communication

Lower Division All students complete COMM 1 (Introduction to Communication Processes), COMM 10 (Communication Research Methods I), COMM 12 (Technology and Communication), one course in public discourse (COMM 20, 23, or 25), COMM 30 (Television Production I), and COMM 40 (News Gathering and Writing I). Students who plan to emphasize video production also complete COMM 31 (Television Production II). Students who plan to emphasize journalism complete COMM 8 (The Communication of News).

Upper Division All students complete COMM 100, 101 (Interpersonal Communication and Mass Communication), COMM 110 (Senior Thesis), COMM 170 (Communication Law and Responsibility), and one communication elective chosen with the help of a faculty adviser. Students also choose to emphasize video production, print journalism, or broadcast journalism as an applied area.

Video production students complete COMM 130 (Television Writing), COMM 133 (Television Directing), and COMM 136 (Television Producing).

Journalism students complete COMM 141 (News Gathering and Writing II), either COMM 144 (Presenting News for Broadcast) for broadcast journalists or COMM 145 (Presenting News for Print) for print journalists, and COMM 146 (Public Affairs Reporting).

Minor The minor in communication requires four lower-division and four upper-division courses. Although leeway is given for individual needs, required courses are COMM 1; 20, 23, or 25; and at least one upper-division theory course.

ADVISING

Because the communication field requires students to have a broad liberal arts education, students work closely with a faculty adviser to plan a cohesive academic program that combines courses in the Communication Department with courses in other departments. Often students complete a minor or take a number of courses in related disciplines such as marketing, theatre arts, psychology, or political science.

All students are encouraged to complete at least a year of serious work on one of the student-run campus media. Special credit practica for such work may be included in the student's academic program.

Additionally, all junior and senior students are encouraged to complete an internship at an off-campus media organization. The department maintains a list of potential internships that may be completed for credit as COMM 98 or 198.

LOWER-DIVISION COURSES

Note: For courses that charge fees, see the Undergraduate Schedule of Classes.

1. Introduction to Communication Processes

Overview of the communication process; effects and responsibilities of interpersonal and mass communication. Special consideration of media institutions, various communication models, and approaches to communication study.

8. The Communication of News

Analysis of theories of the press and characteristics of news as a form of interpersonal and mass communication. Overview of news media history. Ethical reasoning about news gathering and presentation. *Prerequisite: COMM 1.*

10. Communication Research Methods

Introduction to communication as a social science and to methods for analyzing audiences, communication messages, and effects. Design, sampling, and basic computer data analysis. *Prerequisites: COMM 1, 12, and 20, 23, or 25.*

12. Technology and Communication

Examination of the relationship between society and communication technology —past, present, and future. Hands-on introduction to the basic functions of the computer as a communication tool, programmable "thinker," data sorter and searcher, and number cruncher.

20. Public Speaking

Introduction to oral communication theory and practice: the role of the speaker, audience factors, and elements of the message that create an effective speech.

23. Oral and Written Communication

Theory and practice of clear, concise, written and oral communication to inform and to motivate. Messages directed to a specific audience in personal and professional situations.

25. Group Processes

Theory and practice of small task-oriented groups. Leadership skills. Interpersonal dynamics. Critical thinking and problem solving.

27. Intercultural Communication§

An analysis and comparison of communication styles and forms within and among cultural groups in the United States. Emphasis on the communicative behavior of co-cultures such as blacks, Asians, Chicanos, gays, women, and the aging and disabled.

30. Video Production I

Basic theory and technique of TV production. Studio and field assignments introduce the TV production process. Project planning, camera, audio, and basic directing. Occasional field production and editing. Lab fee required.

31. Video Production II

Intermediate studio and portable equipment projects. Basic TV aesthetics, lighting, editing, language, and procedures necessary for directing. Lab fee required. *Prerequisite: COMM 30.*

40. News Gathering and Writing I

Introduction to theories and techniques of gathering and writing news for mass media. Fundamentals of news values, audience information needs, objectivity, journalistic style, and interviewing. Primary emphasis on writing for newspapers. Introduction to writing for broadcast. *Prerequisites: English 1 and 2.* (Also listed as English 74.)

88. Publications Practicum

A 2-unit course that examines current directions in the publication industry, chiefly through presentations by journalists, technical writers, designers, and specialists in book and magazine publication. Introduction to Aldus Pagemaker.

§ Course included in Ethnic Studies Program

89. Radio Broadcasting Practicum

A 1-unit course for students working at KSCU, the University radio station. Radio station concepts and practices; production, sales, and business operations; real-world concepts of programming, music formats, and ad presentation; and vocal presentation techniques.

90. Yearbook Practicum

A 1-unit course for editors and students working on the University yearbook, *The Redwood.* Principles of photojournalism, graphic design, and book production. Discussion of significant work in progress.

91. Photojournalism Practicum

A 1-unit practicum for photo staff of the University newspaper or yearbook. Shooting, processing, and printing regular assignments for student publications. Basic knowledge of photography and darkroom techniques required.

92. Forensics Practicum

A 1-unit course for members of the speech and debate team. Supervised activity in forensics. Competition in debate and speaking events: persuasive, expository, extemporaneous, impromptu speaking, oral interpretation. Field trips required. *Prerequisite: permission of instructor.*

95. Journalism Practicum

A 1-unit course for editors and staff members of the University newspaper, *The Santa Clara.* Review of student writing. Practical advice and experience in journalism.

96. Public Relations Practicum

A 2-unit course involving planning, promoting, and attending public relations events.

97. Communication Practicum

A 2-unit course for participants in department activities. Includes crew members, actors, researchers, lab assistants, and others as approved by instructor. *Prerequisite: permission of instructor or chair.*

98. Internship

Projects with recognized communication institutions outside the University. *Written contract must be approved by internship coordinator and chair one week prior to registration.*

UPPER-DIVISION COURSES

Note: For courses that charge fees, see the Undergraduate Schedule of Classes.

100. Interpersonal Communication (Theory I)

Theories and effects of communication on individuals. Emphasis on interpersonal communication. Meaning and codes; symbolic interactionism; conversation; rules theory; self-disclosure; gender issues. *Prerequisite: COMM 1.*

101. Mass Communication (Theory II)

Mass communication theories and effects. Study of theories pertaining to audiences and their use of media (including new technologies) and media institutions and their practices. Theoretical perspectives drawn from the social science literature and cultural studies. *Prerequisites: COMM 10 and 100.*

110. Senior Thesis

Advanced qualitative and quantitative approaches to communication. Major qualitative or quantitative research project that involves study design, data collection and analysis, and report writing. *Prerequisites: COMM 101 and a statistics course.*

120. Public Discourse

Consideration of the nature of public discourse in a particular area—such as how poverty, homelessness, and welfare are treated in mass media coverage—using rhetorical theory, cultural studies, and the social science literature. Examination of the factors that shape public discourse and how communication might be improved to serve more effectively the needs of a democratic society.

121. Minorities and the Media§

Consideration of the theory and practice of minority representation in the public domain: media, advertising, museums, literature, and/or art. Examination of the process by which minorities are marginalized in public representation and how these images have been and are being challenged. Lab fee required.

122. Gender, Media, and Representation‡

Explores how images of men and women are developed in print, televisual, and filmic media, whether or not these images have an impact on conceptions of self, and alternatives to mainstream presentations of gender and their viability as "resistive" visual alternatives.

130. Television Writing

Creation of scripts for commercials, public service announcements, documentaries, and dramatic productions for television. Basics of formative research and television aesthetics. Ethics of television writing. *Prerequisite: COMM 31 or permission of instructor.*

133. Television Directing

Advanced principles and techniques of TV directing. Advanced TV aesthetics, narrative design, working with performers, and the direction of various formats. Working with producers. Lab fee required. *Prerequisite: COMM 31.*

136. Television Producing

Theory and practice of organizing a commercial, public, or industrial television program. Assessing audience needs, developing creative show ideas, preparing production material. Budgeting and clearances. Postproduction evaluation of effect on audiences. Lab fee required. *Prerequisites: COMM 31 and 130.*

141. News Gathering and Writing II

Advanced news reporting and writing. Emphasis on strategies for news gathering. Beat coverage. Database searches. Opportunities for specialized and in-depth reporting. *Prerequisites: COMM 10 and 40.*

144. Presenting News for Broadcast

Researching, writing, editing, and reporting radio and television news and documentaries. Creation of newscasts. Broadcast news ethics and law. Lab fee required. *Prerequisites: COMM 30 and COMM 141.*

145. Presenting News for Print

Fundamentals of copy editing and designing print presentation formats. Emphasis on concise, logical, explanatory, and attention-getting presentation of words, graphics, and photographs. *Prerequisite: COMM 141.*

146. Public Affairs Reporting

Drawing on news-gathering strategies learned in COMM 141, students develop sharply focused stories from amorphous public issues. Includes group and individual efforts. *Prerequisite: COMM 141.*

149. Public Relations and Corporate Communication

Theories and practice of public relations. Practical project involving advocacy writing, effective planning, and objective evaluation. The function of public relations in organizational settings. Ethics for public relations professionals. (Also listed as MKTG 197.)

§ Course included in Ethnic Studies Program ‡ Course included in Women's Studies Program

150. The Narrative Art of Film

The art and craft of visual images, sound, and motion in film. Aesthetic analysis and criticism. Viewing of classic and contemporary films.

170. Communication Law and Responsibility

Case-study approach to learning about defamation, invasion of privacy, protection of intellectual property (especially copyright), commercial speech, pornography, and access to information by the media. Includes oral and written argument components.

172. Media Criticism

Methods of critical and cultural analysis of various media forms. Topics vary. May be repeated for credit.

180. Communication and Cultural Development

The impact of communication on culture, tracing shift from oral to print to electronic cultures. Special attention to rise of the newspaper, film, advertising, and television in the United States. Offered alternate years.

181. Communication Media and Technology in Education

Exploration of the alternative uses of communication, particularly as applied to education. Theory and practice in distance education, instructional television, multimedia, and interactive video computer-assisted education. Examination of current implementations of the technologies.

183. International Telecommunication

Introduction to the international dimensions of broadcasting in first, second, and third worlds; shortwave and satellite communication; cable, video, and VCRs; telephony; and data communication.

184. Information Campaigns

The use of media and interpersonal communication in campaigns to change attitudes and behaviors. Case studies in antismoking, antidrug, environmental, and political campaigns and propaganda. Audience analysis, message design, and evaluation. Campaign design for local agencies or organizations.

185. Media and Youth

Examination of media content aimed at children and adolescents. Effects of media on development, sex-role socialization, aggression, consumerism. Impact of new technologies, including computers and video games.

188. Publications Practicum

A 2-unit course that examines current directions in the publication industry, chiefly through presentations by journalists, technical writers, designers, and specialists in book and magazine publication. Introduction to Aldus Pagemaker.

189. Radio Broadcasting Practicum

A 1-unit course for students working at KSCU, the University radio station. Radio station concepts and practices; production, sales, and business operations; real-world concepts of programming, music formats, and ad presentation; and vocal presentation techniques.

190. Yearbook Practicum

A 1-unit course for editors and students working on the University yearbook, *The Redwood.* Principles of photojournalism, graphic design, and book production. Presentation and critique of significant work in progress.

191. Photojournalism Practicum

A 1-unit practicum for photo staff of the University newspaper or yearbook. Shooting, processing, and printing regular assignments for student publications. Basic knowledge of photography and darkroom techniques required.

192. Forensics Practicum

A 1-unit course for members of the speech and debate team. Supervised activity in forensics. Competition in debate and speaking events: persuasive, expository, extemporaneous, impromptu speaking, oral interpretation. Field trips required. *Prerequisite: permission of instructor.*

193. Computer Design Workshop

An interdisciplinary workshop for engineering, art, and communication students. Graphics computers and software. Students work in teams to explore solutions to social problems, use the computer to illustrate solutions, and complete formal presentations of their findings. Limited enrollment. *Prerequisite: permission of instructor.*

195. Journalism Practicum

A 1-unit course for editors and staff members of the University newspaper, *The Santa Clara.* Review of student writing. Practical advice and experience in journalism.

196. Public Relations Practicum

A 2-unit course involving planning, promoting, and attending public relations events.

197. Communication Practicum

A 2-unit course for participants in department activities. Includes crew members, actors, researchers, teaching assistants, and others as approved by instructor. *Prerequisite: permission of instructor or chair.*

198. Internship

Projects with recognized communication institutions outside the University. *Written contract must be approved by internship coordinator and chair one week prior to registration.*

199. Directed Research/Creative Project

Independent studies. Directed reading in communication theory, research, responsibilities. Creative projects in television, print, or another medium. *Written proposal must be approved by instructor and chair one week prior to registration.*

DEPARTMENT OF ECONOMICS

Professors: Mario L. Belotti, William F. Donnelly, S.J., Alexander J. Field, David Friedman, John M. Heineke, Laurence R. Iannaccone, Thaddeus J. Whalen Jr.
Associate Professors: Henry G. Demmert *(Chair),* Linda Kamas, Daniel Klein, Helen Popper, Thomas R. Russell, William A. Sundstrom
Assistant Professors: Michael Kevane, David Roth
Lecturer: Anu Luther
W. M. Keck Foundation Professor: Mario L. Belotti
Michel and Mary Orradre Professor: Alexander J. Field

As one of the social sciences, economics studies how the choices we make as individuals—as consumers and producers, as savers and investors, as managers and employees, as citizens and voters—combine to determine how society uses its scarce resources to produce and distribute goods and services. This practical, useful discipline provides insights into important questions regarding the determinants of wealth and poverty; of unemployment, inflation, and economic growth;

of success and failure in the marketplace. The rigorous, systematic analysis that the study of economics brings to bear on these and other real-world issues provides excellent preparation for careers in both the private and the public sectors, as well as for graduate study in economics, business, and law. Economics graduates pursue varied careers in business, law, banking and finance, government service, education, and private consulting.

REQUIREMENTS FOR MAJOR AND MINOR

Students majoring in economics, in addition to fulfilling University Curriculum and general requirements for a Bachelor of Science degree, must complete the following departmental requirements:

Lower Division

1. Economics 1, 2, and 14
2. Business Administration 40 and 41
3. Two math courses: Mathematics 11 and 12 or 30 and 31

Upper Division

1. Economics 114, 115, and 180
2. Four upper-division economics electives
3. Capstone Course 162 or 188

The minor in economics offered through the College of Arts and Sciences requires Economics 1, 2, 14, 114, and 115; Business Administration 40 and 41; and any three other upper-division courses. The student must also take Mathematics 11 and 12 or 30 and 31.

PREPARATION FOR GRADUATE STUDY

In addition to the standard requirements for graduation, students considering graduate study in either economics (leading to an M.A. or Ph.D.) or business (leading to an MBA or Ph.D.) are strongly encouraged to take Economics 170 (Mathematical Economics and Optimization) and Economics 177 (Advanced Econometrics). Those considering graduate study in economics should also take Economics 116 (History of Economic Thought).

Note: Because graduate study in economics requires an extensive background in mathematics, students considering that option should meet with their adviser as early as possible to plan an appropriate course of study.

LOWER-DIVISION COURSES

1. Principles of Macroeconomics

Introduction to the general principles, terminology, and methods of macroeconomics.

2. Principles of Microeconomics I

Introduction to the microeconomics of markets and prices.

14. Principles of Microeconomics II

Continuation of Economics 2. Required of majors and students in the Leavey School of Business and Administration. *Prerequisites: Economics 2 and Math 11 or 30.*

UPPER-DIVISION COURSES

Prerequisites: Economics 1, 2, and 14 or approval of the instructor are required for all upper-division courses.

101. Resources, Food, and the Environment

See Agribusiness 101.

110. Natural Resource Economics

The economics of renewable and nonrenewable natural resources. Topics may include energy resources, minerals, fisheries, timber, endangered species, and biodiversity.

114. Intermediate Microeconomic Theory

Microeconomic theory and applications. Topics include consumer behavior, risk and uncertainty, game theory, and welfare economics.

115. Aggregate Economic Theory

Macro, or aggregate, aspects of the economy, emphasizing modern macroeconomic models for explaining the level of output, employment, and prices.

116. History of Economic Thought

Evolution of economic ideas and their influences on the development of economic practices. *Prerequisites: Economics 114 and 115.*

117. European Economic History

Study of the preindustrial environment and industrial growth patterns of Western Europe.

119. American Economic History

Study of growth and institutional change in the U.S. economy since colonial times. Topics include early industrialization, the economics of slavery, and the rise of large business enterprises and labor unions. *Prerequisite: Economics 115.*

120. Economics of the Public Sector

Microeconomic analysis of the role of government in the market economy. Supply of public goods and services, government's role in controlling externalities and regulating private industry, and the economics of the political process.

122. Money and Banking

Theoretical, institutional, and historical approach to the study of money and banking, with particular emphasis on the relationship between the monetary and banking system and the rest of the economy. (Students may not take *both* Economics 122 and Finance 126 for credit.) *Prerequisite: Economics 115 or permission of instructor.*

124. Industrial Organization

Microanalysis of the structure, conduct, and performance of U.S. industry.

126. Economics and Law

An economic analysis of law and legal institutions focusing on the common-law areas of property, contracts, and torts.

127. Public Finance: Taxation

Analysis of various tax policies and their effect on the economy. Individual income taxes, corporate income taxes, consumption taxes, payroll taxes, state and local taxes, and other alternative forms of taxation. *Prerequisites: Economics 114 and 115.*

128. Business Cycles and Forecasting

Study of the nature and causes of economic instability in an industrial economy. *Prerequisite: Economics 115 or permission of instructor.*

129. Economic Development

Analysis of the historical and theoretical context underlying present efforts to increase the rate of economic growth in underdeveloped countries.

130. Latin American Economic Development

Examination of the economic development of Latin American countries, with particular emphasis on the relationships between economic growth and their social, political, and economic structures.

134. African Economic Development

Economic problems and development of sub-Saharan Africa with emphasis on the relationships among social, political, and economic factors.

136. 20th-Century Economic History

Focuses on the development of the U.S. economy during the 20th century. Topics include the causes and consequences of economic growth, the Great Depression, the rise of government regulation, the changing role of women in the workforce, and the increasing internationalization of markets during the postwar period.

140. Urban Economics

Examination of the economics of urban problems with emphasis on location and land use, the real estate market, and transportation.

145. Economics of "Nonmarket" Behavior

Theoretical and empirical study of behavior and issues not usually viewed as "economic." Possible topics include economics of family behavior, fertility, crime, addiction, charity, altruism, and religion. *Prerequisite: Business Administration 41.*

150. Human Resources Economics

Study of labor productivity, incomes, and employment and how these are affected by labor organizations and labor legislation.

160. The Economics of Poverty

Examines theories regarding the perpetuation of poverty in the United States and evaluates public policies aimed at combating poverty.

162. Capstone: Economic Policy and Perspectives

Application of economic analysis to contemporary policy issues. To be taken during senior year. Satisfies Capstone Course requirement. *Prerequisites: Economics 114 and 115; senior standing.*

163. Ethics and Economic Thought

Use of welfare economics to investigate the issues of distributive justice and market allocation. Topics include utilitarianism, Rawls's maximin principle, Nash fairness, and Arrow's impossibility theorem.

170. Mathematical Economics and Optimization

Generalization and reformulation of many familiar micro- and macroeconomic models as mathematical systems. Focus on exploring the properties of these models using mathematical techniques and on static models. *Prerequisites: Mathematics 12 or 31, Economics 114 and 115, or permission of instructor.*

171. Topics in Mathematical Economics

Topics in mathematical microeconomics and macroeconomics at the discretion of the instructor. *Prerequisites: Mathematics 12 or 31, Economics 114 and 115, or permission of instructor.*

174. Statistical Analysis

Foundations of statistical research methods, including distribution theory, estimation, testing, and prediction; special emphasis on multivariate models. *Prerequisite: Mathematics 12 or 31 or equivalent.*

177. Advanced Econometrics

Introduction to the techniques used by economists to estimate and test economic relationships. Focus on regression analysis, time series problems, and estimation of multiple equation models. *Prerequisite: Business Administration 41.*

180. International Economics

Analysis of the theory of international trade, problems in balance-of-payments adjustments, and international economics policies.

185. Economics of Technological Change

The economic consequences and causes of technological change. Examination of a succession of technological and organizational breakthroughs and the developments that made these breakthroughs possible.

188. Economics Honors Seminar

Modern economic theories and problems. Admission by invitation only. Satisfies Capstone Course requirement.

199. Independent Study

DEPARTMENT OF ENGLISH

Professors Emeriti: Francis X. Duggan, Christiaan T. Lievestro, Elizabeth J. Moran
Professors: James P. Degnan, Diane E. Dreher, Ronald T. Hansen, Richard H. Osberg *(Chair),* William J. Rewak, S.J.
Associate Professors: Terry L. Beers, Mary Judith Dunbar, Marilyn J. Edelstein, Jeanne Gunner, John C. Hawley, Edward Kleinschmidt, Charles T. Phipps, S.J., Frederick P. Tollini, S.J., Fred D. White
Assistant Professors: Phyllis Brown, Michelle Burnham, Eileen Razzari Elrod, Jacqueline C. Jones, Theodore J. Rynes, S.J.
Acting Assistant Professor: Ann Brady Aschauer
Senior Lecturers: Simone J. Billings, John R. Dunlap, Susan Frisbie, Jill Goodman, Claudia Mon Pere McIsaac, Carol G. Rossi, Cory Wade, Jeffrey L. Zorn
Lecturer: Douglas Sweet (Business Writing Coordinator)
Academic-Year Adjuncts: Cheryl Dumesnil, Gary Garvin, Kirk Glaser, Lita Kurth, Andy Levine, Joan L'Heureux, Terry Malik, Sharon Merritt, Robert Michalski, Phillip O'Neill, Timothy Shively, Paul Starer
Gerard Manley Hopkins, S.J., Professor: Ron Hansen

The Department of English provides students with a thorough undergraduate education in the liberal arts centered on the history, theory, and aesthetics of literature and the art of writing. The knowledge and skills developed in English courses are an excellent preparation for careers in law, government, business, communications, and education, as well as for graduate study in literature or writing.

REQUIREMENTS FOR MAJOR AND MINOR

In addition to University Core Curriculum requirements and requirements for the Bachelor of Arts degree, English majors must complete five lower-division English courses (not counting the three writing courses required by the College) and nine upper-division English courses. English majors ordinarily fulfill their College writing requirements by taking English 1 and 2 and English 20.

The Department of English offers its majors two programs: the Language, Literature, and Writing Program, which provides students with a number of options; and the Subject-Matter Preparation Program for students interested in teaching English in California secondary schools.

The minor in English requires courses 41, 42, 43 or 11, 12, and 13; 20; 21; and four upper-division courses, including 116, 117, or 118.

Lower-Division Requirements

Lower-division course requirements include the following six courses: English 11 (Literature I); English 20 (Introduction to Literary Study), which also

fulfills the English major's third college writing requirement; English 21 (Introduction to Poetry); English 41, 42, and 43 (Survey of English Literature I, II, and III).

Note: The Western Culture: Literature I, II, III sequence (11, 12, 13) does not satisfy the University Core Curriculum requirement for English majors, who must follow a Western Culture sequence in the Art, History, Music/Theatre and Dance, or Philosophy departments.

Upper-Division Requirements

Students must distribute their nine required upper-division courses as follows:

1. Three courses from one of the following groups:
   American Literature
   a. Beginnings to World War I (119, 131, 132, 133, 135, 137, 139)
   b. World War I to the present (119, 129, 130, 134, 136, 138–140, 150)
   British Literature
   c. Medieval and Renaissance literature (113, 116–118, 141–145)
   d. 17th- and 18th-century literature (114, 144–146, 151)
   e. Romantic, Victorian, and Edwardian literature (147, 148, 152, 155)
   f. 20th-century literature (114, 149, 150, 155, 167, 189)
   Comparative Literature
   g. Comparative literature (112, 161–163, 165–167, 169, 184B, 189)
   Genre
   h. Drama (110–114, 116–119, 155, 160, 162, 163, 170, 185, 186, 186A)
   i. Fiction (127, 135, 136, 138–140, 149–152, 155, 164, 167, 171)
   j. Poetry (126, 137, 138, 142–148, 155, 161, 162, 172)
   Language, Linguistics, and Writing
   k. Language, linguistics, and writing (101–104, 180)
   l. Writing (126, 127, 170–181, 197)
   Theory and Contemporary Literature
   m. Theory and contemporary literature (123–125, 138, 140, 150, 157)
2. One course in Shakespeare (116–118). If a Shakespeare course from one of the above groups has already been included, a course in Chaucer (142) or Milton (145) must be substituted to fulfill this requirement.
3. One upper-division course in American literature if not already included in one of the above groups
4. One senior seminar (188)
5. Upper-division elective courses, at least one of which must be an English period course (141–152) if not already included from one of the above groups

Students may also propose thematic clusters (e.g., women's, religious, or ethnic literature) in conjunction with their advisers and the department chair.

Recommended Electives

English 103, 104, 116, 117, 118, 123, 124, 142, 145

CREATIVE WRITING EMPHASIS

Coordinator: Edward Kleinschmidt

The creative writing emphasis offers English majors a focused course of study in poetry, fiction, and creative nonfiction. The emphasis is similar to the standard English major with some modifications, integrating courses in poetry, fiction, drama, and creative nonfiction writing within their literary and cultural context. Sequenced courses in creative writing enable students to develop their craft in one or more genres. Introductory courses familiarize them with the theory and practice of the genre, intermediate "craft" courses focus on specific models, using literary examples to explore several "craft" issues, such as line, form, or narrative voice. In advanced courses students write and critique one another's work in a particular genre. The Capstone experience offers an opportunity for involvement in a senior reading series, University publication, or community creative writing project.

Students normally fulfill the creative writing emphasis through the following courses:

LOWER-DIVISION COURSES

Literature (6 courses)

11. Western Culture I
20. Introduction to Literary Study
21. Introduction to Poetry
41, 42, 43. Survey of English Literature I, II, III

Creative Writing (2 courses, plus Practicum requirement)

71. Fiction Writing
72. Poetry Writing
90A/90B. Literary Review Practicum (a minimum of 2 units)

UPPER-DIVISION COURSES

Literature (3 courses)

One period course
One American literature
Shakespeare

Creative Writing (3 courses): Choose one from each of the following three groups:

Craft

126. The Craft of Poetry *or*
127. The Craft of Fiction

Workshop
171. Advanced Fiction Writing *or*
172. Advanced Poetry Writing

Electives
170. Play Writing
173. Screenwriting
174. Advanced Nonfiction Writing
181. Writing for Publication
196. Community Projects in Creative Writing

Other

Senior reading: Seniors organize, produce, and participate in a senior poetry/fiction reading series
Community projects: continued work at Eastside Project sites
190A/190B. Literary Review Practicum. See above, 90A/90B

Students work with the coordinator and other creative writing faculty to arrange an individualized course of study within the emphasis, prepare their portfolios, obtain writing internships or other appropriate experience, and plan for their future careers as writers.

PREPARATION IN ENGLISH FOR ADMISSION TO TEACHING CREDENTIAL PROGRAMS

Coordinator: Jeffrey L. Zorn

The state of California requires that students seeking a credential to teach English in California secondary schools either pass a subject-area examination in English or complete the state-approved Subject-Matter Preparation Program in English. The credential itself requires a fifth year of professional study and student teaching.

The English Department has revised its program for the state of California Subject-Matter Preparation Program in English. The program is similar to the English major with some modifications. Requirements are organized in three strands: (1) writing (English 1, 2, 180, and one from 128, 174, or 175); (2) literature (English 11, 20, 21, 41–43, upper- or lower-division ethnic literature, upper-division Shakespeare, three upper-division American literature, and senior seminar); and (3) linguistics and oral communication (English 104, either 101 or 102, and COMM 20 or 25). A strongly recommended elective is English/Education 98/198B.

CLAD Emphasis

Nearly one-third of the total school population of California is composed of students with limited proficiency in English, and more than half are culturally and ethnically diverse. In order to meet the challenge of teaching such a diverse stu-

dent population, the California Commission on Teacher Credentialing is requiring special training and support for anyone interested in teaching in California public schools. The Division of Counseling Psychology and Education now offers such preparation through the Cross-Cultural, Language, and Academic Development (CLAD) emphasis, in conjunction with the fifth-year credential program. This emphasis requires 9 quarter units of college-level language acquisition, as well as course work at both the graduate and undergraduate level. For courses that meet the undergraduate prerequisite requirements, contact the pre-teaching programs coordinator, Nedra Shunk, Liberal Studies Program.

Note: Authors and topics listed in the following course descriptions are typical rather than definitive. They are not necessarily included in a specific course every time it is offered, and others not listed here may be included. Some courses are offered every year; all, ordinarily, are offered at least once every two years.

LOWER-DIVISION COURSES

1. Composition and Rhetoric I

A course in critical reading and writing. Emphasis on careful reading of substantive nonfiction texts and the development of students' critical-thinking and writing abilities. NCX†

2. Composition and Rhetoric II

A course in critical reading, research, and writing. Emphasis on analysis and critique of substantive nonfiction texts, identification and effective use of primary and secondary sources, and continued development of students' critical-thinking and writing abilities. *Prerequisite: English 1 or its equivalent.* NCX†

1H. Critical Composition I for Honors Students

A course in which students work intensively on their writing as they study and analyze short works of nonfiction and fiction. Students write primarily expository prose, occasionally researched.

2H. Critical Composition II for Honors Students

A course in which students work intensively on their writing as they study and analyze long works of nonfiction and fiction. Students write both expository and argumentative prose and hone those skills pertinent to university-researched papers. *Prerequisite: Critical Composition I.*

3A, 3B. Guided Writing I, II

Seminar-type courses in freshman composition for students who need an extra quarter to develop and practice their analytical reading and writing skills. Both courses must be taken to fulfill the English 1 requirement. *Preregistration required.*

4, 5. Guided Writing I, II

Courses in composition for students with special linguistic needs that have become evident after they have completed English 1. Both courses must be taken to substitute for English 2. NCX†

6. Reading, Syntax, and Composition

Designed for second-language students, whether educated overseas or in the United States, who need to improve their English-language skills. Attention given to all four skills: reading, writing, speaking, and listening (in the language laboratory). Reading assignments focus on American culture. Writing assignments introduce rhetorical patterns required for university-level papers.

† Exempted from challenge

7. Writing for International Students I

Practice in expository writing. Includes study of rhetorical principles, organization, and vocabulary development. Substitutes for English 1. NCX†

8. Writing for International Students II

Continuation of English 7. Focuses on writing in different academic disciplines. Includes a major research paper. Substitutes for English 2. NCX†

11, 12, 13. Western Culture: Literature I, II, III

Chronological survey of Western literature from the ancient Hebrews to the 20th century.

20. Introduction to Literary Study

Introduction to the study of literature through critical reading, writing, and research. Prerequisite for all upper-division English literature courses. For English majors and minors only.

21. Introduction to Poetry

Introduction to the study of poetry through critical reading, analysis, writing, and research. Prerequisite for all upper-division English literature courses. For English majors and minors only.

30. Studies in American Literature‡

Selected authors, movements, genres in American literature. Combines writing instruction with a close reading of literary texts to serve as subjects and stimuli for writing. *Prerequisites: English 1 and 2.*

35. African American Literature§

Readings in the African American literature of America.

36. Chicano Literature I§

Studies in the literary fusion of Spanish and Native American oral and written traditions.

37. Native American Literature§

Studies in Native American oral and written traditions.

41, 42, 43. Survey of English Literature I, II, III

Chronological survey of English literature from *Beowulf* to the present. For English majors only; prerequisite for all upper-division English literature courses.

54. Shakespeare

Readings in selected major plays. Combines writing instruction with a close reading of literary texts to serve as subjects and stimuli for writing. *Prerequisites: English 1 and 2.*

65. Classical Mythology

See Classics 65.

67. Modern Novel

Readings in selected 20th-century novels.

68. Literature and Women‡

Introduction to the study of literature by and about women, with special attention to questions of gender in their social and historical contexts.

69. Literature by Women: Third-World Women Writers in the United States§‡

A study of U.S. women of color writing in the context of their respective cultural and social histories. Analysis of the interplay of racial images. Modern writings comprise the core of the course.

70. Fundamentals of Creative Writing

Instruction and practice in the writing of poetry and fiction. *Prerequisites: English 1 and 2.* NCX†

71. Fiction Writing

Introduction to the writing of fiction. *Prerequisites: English 1 and 2.* NCX†

† Exempted from challenge § Course included in Ethnic Studies Program
‡ Course included in Women's Studies Program

72. Poetry Writing

Introduction to the writing of poetry. *Prerequisites: English 1 and 2.* NCX†

73. Nonfiction Writing

Practice in writing nonfiction, which may include articles, essays, reviews, interviews, and other forms of nonfiction. *Prerequisites: English 1 and 2.*

74. News Gathering and Writing I

See COMM 40.

76. Writing Review

For students who have completed English 1 and 2 but need strengthening or reinforcement of their expository and argumentative skills in writing. Emphasis is on clarity and effectiveness of general academic writing, both expository and persuasive. *Prerequisites: English 1 and 2.* NCX†

79. Composition and Literature§

Instruction and practice in writing critically about selected literary works. Topics vary from section to section. Combines writing instruction with a close reading of literary texts to serve as subjects and stimuli for writing. *Prerequisites: English 1 and 2.*

90. Literary Review Practicum

A 1-unit course for editors and staff of *Santa Clara Review*. Students meet weekly with a faculty member to discuss criteria by which to judge submissions of poetry and prose, in order to improve the quality of the writing the *Review* publishes. Students are graded P/NP only. May be repeated for credit.

95. Journalism Practicum

See COMM 95.

UPPER-DIVISION COURSES

101. Linguistics

General survey of the science of linguistics: phonology, morphology, syntax, grammar, and usage.

102. Theories of Modern Grammar

Analysis of the basic problems of describing grammatical structure; traditional, structural, and transformational-generative grammars.

103. History of the English Language

Origin, structure, and development of the English language. Special attention to the morphology and syntax of Old English.

104. Teaching English as a Second Language (TESL)

Introduction to theories of instruction; survey of methods and materials used in the teaching of English to speakers of other languages. NCX†

110. Classical Tragedy

See Classics 181.

111. Classical Comedy

See Classics 182.

112. Modern Drama

See Theatre 114.

113. English Drama I

Non-Shakespearean drama in England to 1660. Authors may include the Wakefield Master, Marlowe, Ford, Webster, Jonson.

114. English Drama II

Survey of English drama from 1660 to the present. Authors may include Dryden, Wycherley, Congreve, Sheridan, Shaw, Eliot, and selected contemporary playwrights.

116. Shakespeare's Tragedies

An exploration of the great tragedies of Shakespeare's maturity: *Hamlet, Othello,*

† Exempted from challenge § Course included in Ethnic Studies Program

Macbeth, and *King Lear*, with special attention to the theatrical, religious, moral, gender, and political dimensions of Shakespeare's tragedies.

117. Shakespeare's Comedies

An exploration of a selected number of Shakespeare's comedies from his early, middle, and late periods, with particular attention to the social and sexual roles of men and women.

118. Shakespeare's Histories

An exploration of the personal and political worlds of Shakespeare's history plays, with attention to leadership and values in *Richard II, Richard III, Henry IV,* and *Henry V.*

119. American Drama

See Theatre 119.

123. History of Literary Criticism

Examination of major issues, texts, and debates in literary criticism and theory, from classical times to the present. Authors may include Plato, Aristotle, Sidney, Kant, Wordsworth, Marx, Jung, Freud, Sontag, and Showalter.

124. Contemporary Critical Theory

Exploration of major movements in recent critical and literary theory, especially Marxism, feminism, structuralism, deconstruction, reader response, and cultural studies.

125. Feminist Literary Theory and Criticism‡

Study of 20th-century feminist literary theory and criticism. Examination of influences of gender on reading and writing literature.

126. The Craft of Poetry

Analysis and practice of image, line, diction, rhythm, rhyme, form, and other elements of the poet's craft. May be repeated for credit.

127. The Craft of Fiction

An intermediate writing course. Analysis and practice in the technical aspects of fiction writing. May be repeated for credit.

128. Reading and Writing Nonfiction

Analysis and practice in the technical aspects of writing nonfiction. Includes a variety of reading in nonfiction. May be repeated for credit.

129. California Literature

Literature written by Californians and/or about California. Authors may include Steinbeck, Jeffers, Ginsberg, Didion, and Snyder.

129B. Writing for Business

Designed to provide junior and senior business majors with a working knowledge of different styles of professional written communication. Stresses appropriate form, style, and content for both individual and committee/group work—from simple memos to more complex analyses—from short letters to lengthy reports. Most importantly, provides direct experience with "actual" business writing in a focused atmosphere of analysis and discussion.

130. African American Literature

This course focuses on the work of an admittedly selective group of major African American writers. Authors may include W.E.B. DuBois, James Baldwin, and Toni Morrison.

131. Studies in Early American Literature

Study of selected works from the beginnings of American literary history up to the 19th century. Writers, genres, and topics vary each term. Works may include journals, poetry, slave narratives, sermons, letters, legends, autobiographies, essays, and early fiction. May focus on periods and issues such as the literature of cultural contact and European settlement,

‡ Course included in Women's Studies Program

Puritanism, the Enlightenment, and the American Revolution. May be taken more than once when topics differ.

132. Studies in 19th-Century American Literature

Studies of selected American works from the 19th century. Writers, genres, and topics vary each term. May focus on periods, movements, and issues such as American romanticism, transcendentalism, realism and naturalism, regionalism, magazine writing, the rise of women writers, and literature of social protest (abolition and suffrage). May include fiction (short stories, novels, and sketches), plays, poetry, essays, slave narratives, and autobiographies. May be taken more than once when topics differ.

133. Studies in Modern American Literature

Study of selected American works from the early part of the 20th century. Writers and genres vary each term. May focus on periods, movements, and issues such as American expatriate literature, novels of social conscience, the modern poetic sequence, the Harlem renaissance, modernism, magazine fiction, and regional poetry. Works may include fiction (short stories, novels, sketches), plays, poetry, essays, and autobiographies. May be taken more than once when topics differ.

134. Studies in Contemporary American Literature

Study of selected works by contemporary American writers. Writers, genres, and topics vary each term. May focus on periods, movements, and themes such as multiethnic literature, contemporary women novelists, postmodernism, the Beat generation, literature and politics, literature of the 1960s, and experiments in poetic form, literature, and other media. Genres may include novels, short stories, essays, plays, and/or autobiographies. May be taken more than once when topics differ.

135. American Novel I

The American novel before 1900. Authors may include Brown, Rowson, Cooper, Melville, Hawthorne, Stowe, Harper, Twain, Chopin, Crane, James, Wharton, and Dreiser.

136. American Novel II

The American novel in the 20th century. Authors may include Dreiser, Cather, Fitzgerald, Hemingway, Faulkner, Ellison, Barth, and other recent novelists.

137. American Poetry I

American poetry of the 18th, 19th, and early 20th centuries, including works by Taylor, Poe, Emerson, Longfellow, Whitman, Dickinson, and Frost.

138. American Poetry II

American poetry of the modernist era. Authors may include Frost, Robinson, Eliot, Pound, Stevens, Williams, Jeffers, Moore, and Bishop.

139. Special Topics in American Literature

Advanced study of an issue, theme, or genre in American literature that crosses historical periods. Topics change each term. May be taken more than once when topics differ.

140. Chicano Literature II[§]

Advanced studies in Chicano and Native American traditions. Authors may include Arteaga, Alarcon, Bruce-Novoa, Rebolledo, and Herrera-Sobek.

141. Medieval Literature

English literature other than Chaucer from 1300 to 1485. Medieval drama and lyric, Sir Gawain, Pearl, Langland, and Malory.

142. Chaucer

Study of *The Canterbury Tales* in the context of medieval literature and culture. Emphasis on Chaucer's language and style.

[§] Course included in Ethnic Studies Program

143. Renaissance Literature

The comparative literature of the Renaissance. Authors may include Pico della Mirandola, Castiglione, Machiavelli, More, Sidney, Spenser, Labe, de la Cruz, Colonna, and Shakespeare.

144. The 17th Century

The literature of England from 1603 to 1660. Authors may include Donne, Marvell, Bacon, Browne, Burton, Jonson, Herrick, and Herbert.

145. Milton

A study of Milton's major poetry and prose in the light of recent criticism.

146. Neoclassical Literature

The literature of England and Ireland from 1660 to 1798, excluding the novel. Authors may include Congreve, Dryden, Swift, Pope, Johnson, and Boswell.

147. Romantic Movement

The literature of England from 1798 to 1832. Authors may include Blake, Burns, Wordsworth, Coleridge, Byron, Shelley, and Keats.

148. Victorian Literature

The literature of England from 1833 to 1902. Authors may include Carlyle, the Brontës, Tennyson, the Brownings, Newman, Ruskin, Arnold, and Hopkins.

149. Modern British Literature

Twentieth-century poetry and prose. Authors may include Owen, Hardy, Conrad, Yeats, Joyce, Lawrence, Eliot, and Woolf.

150. Contemporary Literature

British and American poetry, fiction, and drama since World War II. Authors may include Cheever, Leavitt, Amis, Duong Thu Huong, Carey, and Kincaid.

151. English Novel I

The 18th-century English novel. Authors may include Defoe, Richardson, Smollett, Sterne, Fielding, and Austen.

152. English Novel II

The 19th-century English novel. Authors may include Scott, the Brontës, Dickens, Thackeray, Eliot, Meredith, Butler, and Hardy.

155. Irish Renaissance

Irish literature in English of the late 19th and early 20th centuries. Authors may include Yeats, Synge, Russell, Lady Gregory, Colum, O'Casey, Stephens, Joyce, O'Connor, and O'Faolain.

157. Commonwealth Literature

Literature written with a postcolonial emphasis in English since 1945 in countries such as India, Pakistan, Kenya, Nigeria, Jamaica, Australia, Canada, and New Zealand.

160. Literature and Performance

See Theatre 160.

161. The Bible as Literature

Literary genres of the Bible (myth, history, wisdom, prophecy, gospel) studied in translations from the Hebrew and Greek against the background of Mesopotamian, Babylonian, Egyptian, Hellenistic, and Roman cultures.

162. Comparative Humanism

Comparative readings in early modern literature by men and women in the Western tradition, with special attention to issues of literacy, education, and humanistic attitudes.

163. Readings in Comparative Literature

Comparative readings in various chronological periods of Western literature: classic, romantic, modern, and contemporary. May be repeated for credit.

164. Themes in Comparative Literature

A comparative exploration of literary themes developed by men and women in the Western tradition, with special empha-

sis on changes in form, character, and myth over time. May be repeated for credit.

165. African Literature

Readings in the contemporary literature of sub-Saharan Africa.

166. Pan-African Literature§

Readings in the literature of the black diaspora. Writers from Africa, the Caribbean, and the United States.

167. Modern Fiction

Selected works of continental, English, and American fiction that are peculiarly modern in sensibility or style. Authors may include James, Proust, Joyce, Gide, Kafka, Mann, Woolf, Lowry, and Faulkner.

168. Women and Literature‡

Studies in literature by and about women. Authors, genres, historical periods, and themes change from year to year. May be repeated for credit by permission of department chair.

169. Non-English Literature in Translation

Non-English literature in translation. Areas and topics vary from year to year.

170. Play Writing

See Theatre 171. May be repeated for credit. NCX†

171. Advanced Fiction Writing

Writing fiction, with emphasis on the short story. May be repeated for credit. *Prerequisite: English 71 or permission of the instructor.* NCX†

172. Advanced Poetry Writing

Workshop in the writing of poetry. May be repeated for credit. *Prerequisite: English 72 or permission of the instructor.* NCX†

173. Screenwriting

An introduction to the fundamentals and format of screenplay writing. Critical analysis of characterization and narrative structure in contemporary movies, as well as workshops in the writing of film treatments, outlines, and scripts. May be repeated for credit.

174. Advanced Nonfiction Writing

Extensive practice in writing nonfiction, which may include articles, essays, interviews, and other forms of nonfiction. May be repeated for credit.

175. Magazine Writing

Writing articles for magazines and periodicals. Emphasis on controversial political, cultural, and scientific topics. May be repeated for credit. *Prerequisite: English 73 or 74, or permission of the instructor.* NCX†

176. Advanced Writing Review

This course extends instruction in explanatory and exploratory writing principles introduced in prior courses. Activities include reading and intensive writing on a range of topics. Students conduct peer reading/revision groups and meet individually in conference with the instructor. A final project replaces a final exam.

177. Argumentation

Argumentative and persuasive writing, ideal for students planning careers in business, politics, or law. *Prerequisites: English 1 and 2.* NCX†

178. Technical Writing

An introduction to the writing of technical documents (reports, proposals, procedural and process pieces, etc.) for a variety of audiences and purposes. Open to students of all majors; ideal for students planning careers in industry, science, or medicine. *Prerequisites: English 1 and 2.* NCX†

† Exempted from challenge ‡ Course included in Women's Studies Program
§ Course included in Ethnic Studies Program

179. Business Writing

Practice in the conventions of business writing. Emphasis on clear, concise memoranda, letters, and reports. *Prerequisites: English 1 and 2.* NCX†

180. Writing for Teachers

Writing and the teaching of writing. Especially recommended for students planning careers in primary and secondary education. *Prerequisites: English 1 and 2.* NCX†

181. Writing for Publication

Tutorial for serious writers from all disciplines, including sciences, business, and engineering. May be repeated for credit. Flexible scheduling. *Enrollment by permission of the instructor.* NCX†

182. Introduction to Technical Writing for Engineers

The basics of effective written technical communication, including problem analysis, audience analysis, document design, revision, and the design and use of graphics. Satisfies the third writing requirement for engineering majors. Open only to junior and senior engineering majors. *Prerequisites: English 1 and 2.* NCX†

184. Special Topics

Major authors, genres, literary movements, or themes. May be repeated for credit with permission of department chair.

184A. Women in Antiquity‡

See Classics 185, 186, and 187.

184B. Classical Epic

See Classics 180.

184C. Classical Mythology in the Western Tradition

See Classics 184.

185. Drama and Criticism

See Theatre 185.

186. Special Topics in Drama

See Theatre 186.

188. Senior Seminar

Special topics in English, American, or comparative literature for senior English majors. *Enrollment by permission of instructor.* NCX†

189. Honors Seminar

Seminar for students in University Honors Programs and other invited students. Since topics change from year to year, this course may be repeated for credit with permission of the department chair. NCX†

190. Literary Review Practicum

A 1-unit course for editors and staff of *The Santa Clara Review*. Students meet weekly with a faculty member to discuss criteria by which to judge submissions of poetry and prose, in order to improve the quality of the writing the *Review* publishes. Students are graded P/NP only. May be repeated for credit.

195. Journalism Practicum

See COMM 195.

196. Writing in the Community

In this class, fiction writers and poets facilitate creative writing workshops at placements and agencies served by the Eastside Project. *Prerequisite: permission of instructor.*

197. Practicum in Tutoring Composition

Training in the tutoring of writing. Open to students of all majors who have strong writing skills and who enjoy helping fellow students improve their work. Tutors are paired with freshman composition students, prepare reports of their tutorials, and write analytical papers about the tutoring experience.

† Exempted from challenge ‡ Course included in Women's Studies Program

198. Writing Internship

Work-study program for students of superior writing ability who gain course credit by supervised writing on newspapers, magazines, or for government or private agencies. Enrollment is by permission or invitation of the instructor and department chair. May be repeated once for credit. Students are graded P/NP only. NCX†

98/198B. Introduction to Secondary School Education: Practicum

See Education 98/198B.

199. Directed Reading/Directed Research

In special circumstances and with permission of the department chair, a student may request a course in directed reading or writing from an instructor. May not be taken in a subject listed in this bulletin. NCX†

DEPARTMENT OF HISTORY

Professors Emeriti: Mary McDougall Gordon, Norman F. Martin, S.J., Matt S. Meier
Professors: Steven M. Gelber *(Chair)*, Gerald McKevitt, S.J., Timothy J. O'Keefe, Peter O'M. Pierson, David E. Skinner
Associate Professors: Ramon D. Chacón, Dorothea R. French, George F. Giacomini Jr., William S. Greenwalt (courtesy of Classics Department), Arthur F. Liebscher, S.J., Jo Burr Margadant, István I. Mócsy, Barbara Molony, Robert M. Senkewicz, S.J., Thomas Turley
Assistant Professor: Sita R. Raman
Lecturers: Katherine Royer, Nancy Unger
Lee and Seymour Graff Professor: Peter O'M. Pierson

History provides an understanding of all aspects of the human past. By synthesizing the humanities and social sciences, the study of history develops the ability to research, analyze, and communicate the reasons nations and peoples have evolved in particular ways. Knowledge and skills developed in history are excellent preparation for graduate study and careers in education, communications, government, law, and business.

REQUIREMENTS FOR MAJOR AND MINOR

The history major combines breadth and depth. Students engage the expanse of human culture through the required study of diverse geographical areas. Students study one culture more deeply by taking at least five courses in a required specialization area.

In addition to the general University Core Curriculum requirements and the degree requirements for the Bachelor of Arts, majors must complete at least 15 courses that meet the following requirements:

1. At least one course in each of the five geographical areas offered by the department: Africa/Middle East, Asia, Europe, Latin America, and United States.
2. Four lower-division courses that include the study of at least *three* of the five geographical areas mentioned above, at least one of which must be in the student's area of projected individual specialization
3. Nine upper-division courses, four of which, including a seminar, must be in the student's individual area of specialization. The normal specialization areas are the five geographical areas, but other geographical and/or chronological specialization areas may be developed by students in consultation with the departmental faculty.
4. History 100A (Historical Interpretation) and History 101A (Historical Writing); recommended at the end of the sophomore or beginning of the junior year (may be counted as lower- or upper-division courses).
5. Two courses outside of history in a student's specialization area that must be approved by the student's departmental faculty adviser.

A minor in history is also available. It requires a minimum of seven courses, at least four of which should be upper division.

PREPARATION IN SOCIAL SCIENCES FOR ADMISSION TO TEACHING CREDENTIAL PROGRAMS

Coordinator: Dorothea French

The state of California requires that persons seeking a credential to teach history in California schools hold a Single-Subject Teaching Credential in social science authorizing them to teach history and social science classes in departmentalized settings. Students wishing to enroll in a credential program must either pass a subject-area examination in social science or complete a state-approved Subject-Matter Preparation Program in social sciences. The credential program itself requires a fifth year of study and student teaching.

The History Department offers a program that satisfies the requirements for the state of California Subject-Matter Preparation Program in social science. The program is similar to the history major with some significant modifications. Requirements are 14 history courses: 6 lower division (History 7, 8, 9, 11, 12, and 13); 8 upper division (History 100, 101, 186, 189, a seminar, and one course each in Africa, Asia, and Latin America); 6 social science courses: Economics 1, 2; Anthropology 50; Political Science 1 or 2, and 1 upper-division elective; 1 elective in the behavioral sciences (Anthropology, Psychology, Sociology); and 1 teaching practicum: Education 98 or 198B or equivalent supervised teaching.

Because the program requirements are very specific, students who contemplate enrolling should consult the coordinator at an early date.

CLAD Emphasis

Nearly one-third of the total school population of California is composed of students with limited proficiency in English, and more than half are culturally and

ethnically diverse. In order to meet the challenge of teaching such a diverse student population, the California Commission on Teacher Credentialing is requiring special training and support for anyone interested in teaching in California public schools. The Division of Counseling Psychology and Education now offers such preparation through the Cross-Cultural, Language, and Academic Development (CLAD) emphasis, in conjunction with the fifth-year credential program. This emphasis requires 9 quarter units of college-level language acquisition, as well as course work at both the graduate and undergraduate level. For courses that meet the undergraduate prerequisite requirements, contact the pre-teaching programs coordinator, Nedra Shunk, Liberal Studies Program.

WORLD AND COMPARATIVE HISTORY

14. Modern World History

Examines the significant events, relationships, and ideas that have shaped the development of a transformed international system during the past 300 years. Focuses on a few themes rather than a chronological survey of different regions or cultures. Major themes include the scientific and industrial revolutions; new technologies; nationalism and imperialism; effects of new technologies; anti-colonialism and neo-imperialism; the new world (dis)order.

25. 20th-Century World Wars

A study of the causes, conduct, and results of World Wars I and II and their place in modern history. Civilian and military leadership and the chief campaigns and battles. (May also count as European History.)

26. Modern Revolutions

Comparative study of the causes, successes, and failures of selected revolutions and rebellions. Emphasis on revolutionary leadership, ideology, and organization.

100A. Historical Interpretation

An investigation of the art and science of the craft of history through an examination of the ways in which historical events have been interpreted by diverse historiographical methods.

102. Historical Perspectives

Editorial board work for the department's journal, *Historical Perspectives. Prerequisite: permission of instructor.*

103. History of the Jesuits, 1491–1992

An interdisciplinary examination of the evolution of the Society of Jesus from its founding at the close of the Middle Ages to the present. An exploration of how the order has been, and continues to be, constantly shaped and molded by external secular and ecclesiastical influences. (May also count as European or U.S. history.) (Cross-listed as Religious Studies 194x.)

104. African Americans and Africa§

Historical examination of the roots of African American culture and politics: the impact of the Atlantic slave trade and the continuity of African cultures in the Western Hemisphere.

105. Modern World History

Examines the significant events, relationships, and ideas that have shaped the development of a transformed international system during the past 300 years. Focuses on a few themes rather than a chronological survey of different regions or cultures. Major themes include the scientific and industrial revolutions; new technologies; nationalism and imperialism; effects of new technologies; anti-colonialism and neo-imperialism; the new world (dis)order.

§ Course included in Ethnic Studies Program

191. Technology and Imperialism Seminar

Examination of the relationship between the development of technologies and imperial organization. Emphasis on the application of technologies to imperial expansion and control during the 19th and 20th centuries and how imperialism has contributed to the rise of new technologies.

198. Senior Thesis

Selected seniors with at least a 3.6 GPA research and write a major paper under the direct supervision of a faculty member. Course runs fall and winter quarters; students meet regularly in a seminar setting to review research and writing techniques and to exchange experience and ideas.

199. Directed Reading/Directed Research

Directed reading and research in source materials and secondary works dealing with selected historical problems in world and comparative history. *Prerequisite: permission of department chair and instructor.*

U.S. HISTORY

6. Survey of U.S. History

A survey of U.S. history from colonial times to the present.

7. United States: Colonies and Constitution

Introductory survey of U.S. history from first European settlement through the Constitutional Convention. Political, economic, social, and intellectual aspects of America's first 200 years.

8. United States: The 19th Century

Introductory survey of U.S. history from the Constitutional Convention to the Spanish American War. Political, economic, social, and intellectual aspects of the century that saw the nation evolve from an infant state to an industrial world power.

9. United States: The 20th Century

Introductory survey of U.S. history from the Spanish American War to the present. Political, economic, social, and intellectual aspects of America in an era of international involvement and domestic change.

81. Chicanos in the Southwest§

Survey of the Chicanos in California and the Southwest. Emphasis on the period since 1848 and on Texas, New Mexico, and California.

101A. Historical Writing

Researching and writing history papers. *Required of all majors in last quarter sophomore year or first quarter junior year.*

170. Revolution, Confederation, Constitution

Intensive study of the origins, progress, and culmination of the American Revolution to 1800.

171. The New Nation

Social and political reforms, expansion and changes, sectional and national politics of the United States between 1800 and 1850.

172. The Union in Crisis

A study of the major aspects of the antebellum period, the Civil War, and the problems of Reconstruction: the abolitionists, the rise of the Republican Party, the conduct of the war, the role of the free African American, constitutional readjustment, and the rise of the new South.

§ Course included in Ethnic Studies Program

173. The Modern Era: 1920–1960

The end of the Republican ascendancy in the 1920s and the rise of the New Deal coalition. America at war again and the Cold War at home and abroad.

174. America in the 1960s

Little Rock to Watergate: social, political, and foreign policy upheavals of the 1960s. Civil rights movement, student and anti-war movements, hippies and others, Kennedy and Johnson, end of the Cold War and the Vietnam War, Nixon and Watergate.

175. 20th-Century U.S. Diplomatic History

Critical study of U.S. international relations. Economic, political, social, and public opinion forces influencing the development of U.S. policy.

176. Social Movements in 20th-Century America

Popular movements for and against change. Investigation of the response of the American people to the problems of modern industrial society. Labor, women's rights, black activism, anti-radicalism, Ku Klux Klan, peace movement, and others.

179. Special Topics in Early U.S. History

Occasional lecture courses in special topics in U.S. history.

180. Native Americans of the United States[§]

History of Native Americans of the United States from European contact to the present. Emphasis on 19th- and 20th-century developments.

181. Women in U.S. Society[‡]

Historical survey of women's experiences from the Puritan era to the present. Emphasis on class, race, and ethnic origins, and activist roles of women.

182. Family in U.S. History[‡]

History of the family in the United States from the 17th to the 20th century. Impact of changing society on the family from birth to death. Particular focus on life stages, child rearing, and sexuality.

183. American Capitalism

Analysis of the philosophy and social impact of the capitalist idea as it developed in America from the colonial period to the 20th century. Role of the businessperson, social mobility, and some anti-capitalist ideas.

184. American Historical Geography

Introduction to the physical and cultural geography of the United States, with a special emphasis on California. Through texts, maps, and discussions, explores how America's geography is not just the stage for American history but an integral player in that history.

185. American Environmental History

Introduces students to this exciting and vital new field, beginning with pre-Invasion Indians and concluding with an assessment of the American environment today. Examines through readings and discussions a variety of influential issues and themes. Particular emphasis to politics (both domestic and foreign), gender, race, ethnicity, and religion. Assigned readings provide a sampling of the variety of current historical approaches to this lively discipline.

186. California

Survey of the state's history: its Native American origins, Spanish invasion and missionization, Mexican period, U.S. conquest, gold rush, and development to the present. Major attention to the 19th century.

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§ Course included in Ethnic Studies Program ‡ Course included in Women's Studies Program

187. The American West

The West as a factor in U.S. history, from the 17th century to the present. Emphasis on the 19th-century trans-Mississippi frontier.

189. Special Topics in Modern U.S. History

197. Seminar in U.S. History

Original research and group discussions of selected problems and periods.

198. Senior Thesis

Selected seniors with at least a 3.6 GPA research and write a major paper under the direct supervision of a faculty member. Course runs fall and winter quarters; students meet regularly in a seminar setting to review research and writing techniques and to exchange experience and ideas.

199. Directed Reading/Directed Research

Directed reading and research in source materials and secondary works dealing with selected historical problems in U.S. history. *Prerequisite: permission of department chair and instructor.*

EUROPEAN HISTORY

11. Western Civilization: Ancient

Interdisciplinary survey of the development of Western culture from the Near Eastern origins of Western civilization through the collapse of the Roman Empire. Open to all students.

12. Western Civilization: Medieval and Early Modern

Interdisciplinary survey of the development of Western culture from the fall of the Roman Empire to the age of Louis XIV. Open to all students.

13. Western Civilization: Modern

Interdisciplinary survey of the development of Western culture from 1715 to the present. Open to all students.

16. Ancient Greek Religion

Consideration of the differing attitudes and expectations of polytheisms and monotheisms and of religious expression in the context of classical Greek cult and ritual. Readings are drawn from a wide variety of literary, historical, philosophical, and epigraphical texts. (Also listed as Religious Studies 95x and Classics 67.)

17. Ancient Roman Religion

Examination of religious practices, institutions, and beliefs of the ancient Romans. Special consideration of interconnections in Roman religiosity between the acts/beliefs of individuals and the concerns of the state. Concludes with philosophic mysticism, magic, mystery religions, and Christianity. (Also listed as Religious Studies 96x and Classics 68.)

108. Ancient Greece

A survey of Hellenic history from the Bronze Age to Alexander the Great. Emphasis on the rise and fall of the polis as an independent social, cultural, and political community. (Also listed as Classics 108.)

109. Hellenistic Age and the Rise of Rome

The Hellenistic world and Alexander the Great's successors. Rome from its origins to its conquest of the Mediterranean and Gaul. The collapse of the Roman Republic; establishment of the Principate. (Also listed as Classics 109.)

110. Roman Republic

A political, military, social, and cultural review of the rise and fall of the most successful state the West has ever known. (Also listed as Classics 110.)

111. Roman Empire

A political, social, and cultural survey of the Roman Empire beginning with Augustus and tracing changes in Rome from the development of the Roman Empire as a world state to the development of Christianity as a world religion. (Also listed as Classics 111.)

112. Byzantine Empire

An examination of the later Roman (Byzantine) Empire (A.D. 313–1453) and its important role in preserving and transmitting the Greco-Roman tradition and acting as the conduit for cultural, religious, and economic exchange between the East and the West. (Also listed as Art 172.)

113. Family in Antiquity

A survey of family social, economic, political, and religious roles in various ancient Greek states and in Republican and Imperial Rome. (Also listed as Classics 187.)

115. Western Barbarians: 300–1100

A social and cultural survey of Western Europe from the first appearance of the barbarians on the borders of the Roman Empire to the 12th-century renaissance. The fall of Rome, the survival of ancient culture, the emergence of feudalism, the roots of modern social and intellectual structures.

116. Crusading Age: 1000–1450

The culture and society of the High Middle Ages from the 11th century to the 15th century. The 12th-century renaissance, the crusades and the idea of Christendom, the origins of modern governmental and economic concepts, Gothic art, and courtly love.

117. State and Church in the Middle Ages, 1000–1450

The struggles between state and church that formed modern Western political institutions. The rise of royal and papal theocracy, the emergence of the idea of limited government, the foundation of representative institutions and modern legal institutions, the origins of the modern state. (Also listed as Religious Studies 174x.)

118. Renaissance and Reformation: Europe, 1350–1600

The transformation of Europe from a medieval to a modern society. The Italian and Northern Renaissance, the formation of the early modern state, dynastic struggles and overseas expansion, the Protestant Reformation and the Catholic response. Cultural, artistic, and intellectual developments.

119. Dynasties and Discoveries: Europe, 1560–1763

Empires, warfare, and the growth of the early modern state. Culture and thought in the Age of Scientific Revolution and Enlightenment.

120A. Early Modern England

The development of the English nation from the later Middle Ages to the Industrial Revolution. The Tudor–Stuart monarchy, parliamentary development, imperial expansion, and Industrial Revolution.

120B. Modern England

From Britain's imperial zenith to the present. Social and political reform, colonial empire, women suffrage, the Irish problem, World Wars I and II, and the postwar welfare state. *May be taken without first taking 120A.*

121. English Reformation

A study of the religious changes in 16th-century England from the accession of Henry VIII to the Gunpowder Plot. Evaluates traditional medieval patterns of belief

and worship, Tudor dynastic necessities and political ambitions, the influence of continental theological reformation, and popular acceptance or rejection of religious innovations. (Also listed as Religious Studies 175x and with Catholic Studies.)

122A. Germany I

Social, political, and cultural development of the German nation: Germany from the Reformation to 1848.

122B. Germany II

Social, political, and cultural development of the German nation: Germany from 1848 to the Third Reich. *May be taken without first taking 122A.*

123A. Russia I

Evolution of medieval Russia; impact of Mongolian domination; legacy of Orthodoxy; development of autocracy.

123B. Russia II

Westernization of Russia and the reforms of Peter the Great; 19th-century revolutionary movements and the origins of the Russian Revolution; the Soviet Era. *May be taken without first taking 123A.*

124. European Diplomatic History

Relations of major European powers since 1870. Emphasis on economic, political, and social forces that influenced these relations.

125. Medieval European Women‡

An examination of the ways society's constructs of power and control affected medieval women's lives and the ways in which women affected society. Focus on marriage and the family, the Church, public power and authority, the economy, and sex and love.

129. Special Topics in Ancient and Early Modern European History

Occasional lecture courses in selected topics in ancient and early modern Europe.

130. Spain

The peoples of Spain from earliest times to the present. Emphasis on period from Ferdinand and Isabella to the late 17th century (*Siglo de Oro*) and to the crises of 20th-century Spain.

131. Ireland

Irish history since the Reformation. Emphasis on the formation of modern Irish nationalism, the revolutionary movements of the 19th and 20th centuries, and the Northern Irish conflict.

132. Modern and Contemporary East Central Europe

Ethnic and historic divisions in East Central Europe; the Ottoman and Austro-Hungarian empires during the 19th century; World War I and the failure of the postwar system; effects of World War II; Sovietization of the region and the failure of Stalinism; the road to independence; breakup of Yugoslavia; contemporary problems.

133. Cultural and Intellectual Modern Europe

Cultural and intellectual history of Europe from the Enlightenment to the present.

134. European Culture and Society

Brief introduction to European culture and civilization from the end of the Middle Ages to the mid-20th century in Europe and the United States. Emphasis on cultural forms, letters, the fine arts and music, and social developments.

139. Special Topics in Modern Europe

Occasional lecture courses in selected topics in modern Europe.

‡ Course included in Women's Studies Program

191. Seminar in Ancient European History

Original research and group discussions of selected problems and periods.

192. Seminar in Medieval or Modern Europe

Original research and group discussions of selected problems and periods.

198. Senior Thesis

Selected seniors with at least a 3.6 GPA research and write a major paper under the direct supervision of a faculty member. Course runs fall and winter quarters; students meet regularly in a seminar setting to review research and writing techniques and to exchange experience and ideas.

199. Directed Reading/Directed Research

Directed reading and research in source materials and secondary works dealing with selected historical problems in European history. *Prerequisite: permission of department chair and instructor.*

AFRICAN HISTORY

45. Introduction to African History and Cultures

Historical survey of the origins and development of African cultures from ancient times to the onset of European colonialism in the 19th century. Focus on selected civilizations and societies. Patterns of African social, economic, and political life.

140. Colonial Africa

African institutions and culture in the imperial era, the rise of nationalism, the effects of social and economic change.

141. Independent Africa

African economic, social, and political problems after independence. Major ideologies and international conflict.

142. Modern Middle East and North Africa

European imperialism and the development of Arab nationalism. Problems of economic development, political stability, and military conflict.

143. Origins and Development of Islam

Prophethood of Muhammad and the Muslim revolution. Islamic conquests and formation of Muslim institutions. Development of philosophy, law, and art during the "golden age" of Islam. Fragmentation of the Muslim empire; the rise of Turkish power; the Crusades. (Also listed as Religious Studies 188x.)

144. Women in Islamic and African Societies‡

Comparative analysis of the legal position of women and their social, economic, and political roles in different African and Middle Eastern cultural settings.

149. Special Topics in African History

Occasional lecture courses in special topics in African history.

193. Seminar in African History and Middle East History

Original research and group discussion of selected problems and periods.

198. Senior Thesis

Selected seniors with at least a 3.6 GPA research and write a major paper under the direct supervision of a faculty member. Course runs fall and winter quarters; students meet regularly in a seminar setting to review research and writing techniques and to exchange experience and ideas.

‡ Course included in Women's Studies Program

199. Directed Reading/Directed Research

Directed reading and research in source materials and secondary works dealing with selected historical problems in African history. *Prerequisite: permission of department chair and instructor.*

ASIAN HISTORY

50. Introduction to East Asian Studies

A study of the emergence of modern nations from the rich and diverse cultures of the Pacific and the mutual transformations of East Asia, Europe, and America in the past century. An examination of the linkages within the region and with other regions using concepts borrowed from anthropology, economics, and political science.

51. Introduction to Chinese Civilization

History and culture from the dawn of civilization to the post-Maoist present. Ancient philosophies. Confucianism, traditional political institutions, urbanization, the impact of the West, 20th-century reform and revolution. Modern society, politics, and economics.

52. Introduction to Japanese Civilization

Two thousand years of Japanese history and culture. Age of classical civilization, feudalism and shogunal government, 19th-century modernization, imperialism. War in the 20th century. Postwar social and economic successes.

55. Introduction to Southeast Asia

Introduction to Southeast Asia. A historical survey of the civilizations of Malaysia, Indonesia, Thailand, Cambodia, Laos, Vietnam, and the Philippines from their origins to the present day. Focuses on societies, cultures, religions, colonialism, nationalism, and postmodern socioeconomic issues.

146A. Medieval and Early Modern Japan

From prehistoric times to the mid-19th century. Japan's adaptation of Chinese civilization; cultural and literary history; political effects of socioeconomic changes from the classical period through feudalism to interaction with the West; ideological developments and response to Western encroachment.

146B. Modern Japan

Major themes in Japanese modern history since 1868. Japan's 19th-century "economic miracle"; problems faced by a rapidly modernizing agrarian economy; nationalism and imperialism and their effects on foreign policy; adaptation of Western ideals and institutions; social and political movements in the 20th century, especially the suffrage and labor movements; postwar reconstruction. *May be taken without first taking 146A.*

147A. Premodern China

Chinese civilization from the earliest times to the Western intrusion. Dominant historical and cultural patterns; evolution of Confucianism, Taoism, and Buddhism; development of political institutions; analysis of preindustrial economic experience; state-society relations.

147B. Modern China

Social, political, economic, and cultural development from the 17th to the 20th centuries. State formation from monarchy to socialism, cultural history from Confucianism to individualism, issues of poverty and population. Intellectual and cultural changes and the roles of the West.

Indigenous forces shaping China's modern evolution. *May be taken without first taking 147A.*

148. U.S.-Japan Relations

The two Pacific powers: their initial gunboat encounter in 1853; the rise of imperialism; rivalry for influence in East Asia. The Pacific War and its aftermath. Contemporary trade and security issues.

150. Women in East Asia‡

Gender as a historical category in analyzing the impact of change in East Asia from antiquity to the modern period. Changing roles and status of women under industrialization, intellectual development, and legal reform.

151. Imperialism in Asia

Social, political, and economic effects of imperialism in China, Korea, Vietnam, and the Philippines in the 19th and 20th centuries.

154A. Ancient and Classical India

Early India from its prehistoric roots to about A.D. 1000 with a focus on these sacred and secular themes: Hindu, Buddhist, and Jain religious and philosophical texts, beliefs, practices, and development; social stratification through caste (varna-jati system), gender, and ethnicity; kingship and state; rural-urban economies; trade and cultural expansion; literature, religious art. (Also listed as Religious Studies 170x.)

154B. State, Religion, and Gender in Medieval and Premodern India

India after the arrival of Islam with a focus on Hindu and Muslim models of kingship and state; the relevance of temples, mosques, and mausoleums to political power; the development of Hindu bhakti theism; Islam in India; Indian Sufism; Sikhism and sociocultural syncretisms and conflicts, gender roles in Hindu-Muslim societies. (Also listed as Religious Studies 152x.) *May be taken without first taking 154A.*

154C. Modern India

India after Portuguese arrival in 1498 to the present. Themes include economic imperialism, Hindu socioreligious reform and its relevance for women and the caste system; Muslim awakening and modernization; Indian revolts and nationalism; constitutional developments; Gandhi, Nehru, Jinnah; postindependence issues concerning democracy, women, society, economic development and environment, national cohesion, and communalism. *May be taken without first taking 154A or B.*

155. Women in South Asia‡

The history of women in South Asia from preliterate eras to the present using primary texts, art, and multidisciplinary research data. Tribal/pre-Aryan matriarchies, Aryan patriarchy; women in religion (Hinduism, Buddhism, Jainism, Islam); gender roles; gender, caste, and class as categories; goddesses, saints, devadasis, workers and peasants, rulers, and national leaders; education and women, current problems facing women.

156. Imperialism in South and Southeast Asia

Examines Western imperialism and its social, economic, cultural, and political effects upon South and Southeast Asia; specific focus on changing economies, political ramification, missionary and secular Western influences on indigenous societies; revolts and nationalism.

157. Art and Religion of South Asia

An examination of Hindu, Buddhist, and Jain deities, beliefs, and practices as depicted in ancient and medieval Indian sculpture, architecture, paintings, and a study of secular art.

159. Special Topics in Asian History

Occasional lecture courses in special topics in Asian history.

‡ Course included in Women's Studies Program

194. Seminar in South Asian History

Original research and group discussion of selected problems and periods.

195. Seminar in East Asian History

Original research and group discussion of selected problems and periods.

198. Senior Thesis

Selected seniors with at least a 3.6 GPA research and write a major paper under the direct supervision of a faculty member. Course runs fall and winter quarters; students meet regularly in a seminar setting to review research and writing techniques and to exchange experience and ideas.

199. Directed Reading/Directed Research

Directed reading and research in source materials and secondary works dealing with selected historical problems in Asian history. *Prerequisite: permission of department chair and instructor.*

LATIN AMERICAN HISTORY

61. Latin America: Indians and Conquerors

Introduction to Latin American culture and civilization from the Native American empires, through the Iberian conquest, to the independence of Latin American nations.

62. Modern Latin America

Introduction to Latin American history focusing on the formation of 19th-century nations and the forces shaping their 20th-century experience.

64. Central America

Survey of Central America from independence to the present. Focus on three Central American countries: Nicaragua, Guatemala, and El Salvador. Emphasis on recent developments; social, economic, and political problems (militarism, dictatorship); and the nature of U.S. policy vis-à-vis Central America.

160. Mexico: Colonial and Early National Periods

Mexico from the Mayas and Aztecs to the Benito Juárez era in the 1870s. The Indian past, the Spanish conquest, and independence to Juárez's La Reforma.

161. Modern Mexico

Mexico since the Benito Juárez regime to the present. Emphasis on the Porfiriato, the 1910 Revolution and its institutionalization, and the development of the modern state.

162. Argentina

The political and economic development of this southern South American nation from the late 18th century to the present, with emphasis on 19th-century gaucho leaders and liberalism, and also on 20th-century democracy, militarism, and Peronism.

163. Cuba and the Caribbean

A survey from the colonial period to the present of three Caribbean nations: Cuba, the Dominican Republic, and Puerto Rico. Emphasis on 20th-century developments; social, economic, and political issues (dictatorship, revolution, social stratification); and the role of U.S. policy vis-à-vis Cuba and the Caribbean.

169. Special Topics in Latin American History

Occasional lecture courses in special topics in Latin American history.

196. Seminar in Latin American History

Original research and group discussion of selected problems and periods.

198. Senior Thesis

Selected seniors with at least a 3.6 GPA research and write a major paper under the direct supervision of a faculty member. Course runs fall and winter quarters; students meet regularly in a seminar setting to review research and writing techniques and to exchange experience and ideas.

199. Directed Reading/Directed Research

Directed reading and research in source materials and secondary works dealing with selected historical problems in Latin American history. *Prerequisite: permission of department chair and instructor.*

INDIVIDUAL STUDIES

Program Coordinator: William J. Prior (Philosophy)

An individual studies major has been established to meet the needs of students who wish to design a course of studies with a multidisciplinary perspective.

REQUIREMENTS FOR MAJOR

Students who wish to be admitted to the program as a candidate for the degree of Bachelor of Arts or Bachelor of Science in Individual Studies must

1. be a full-time student at Santa Clara for at least one year;
2. have fewer than 111 quarter units of academic work completed at the time of application;
3. have a minimum 3.0 grade point average; and
4. submit a Petition for Admission to the program coordinator for review and approval.

The student petition should include

1. a clear, logical, and conceptually refined description of the proposed program;
2. a well-developed argument, supported by appropriate evidence, showing that no existing academic major can meet the student's educational objectives; and
3. a plan of study listing courses, seminars, internships, etc., which corresponds to the student's educational objectives and fulfills the requirements of the University Core Curriculum.

LIBERAL STUDIES

Program Coordinator: Nedra Shunk (Liberal Studies)
Program Council: Jean J. Pedersen (Mathematics), Linda S. Brunauer (Chemistry), Jeffrey Zorn (English), Carol J. White (Philosophy), Eleanor W. Willemsen (Psychology)
Assistant Professors: Pia Moriarty, Timothy C. Urdan
EFTP Community Liaison: David Sul

The liberal studies major is designed for undergraduates interested in a career in elementary school teaching or students seeking a broad background in the liberal arts and sciences. The Liberal Studies Program is approved by the California State Commission on Teacher Credentialing as an alternative to completing the Multiple-Subject Assessment for Teachers (MSAT). Completion of the liberal studies major exempts individuals seeking a teaching credential for the elementary level from taking the MSAT, but the credential itself requires a fifth year of study. Santa Clara's graduate Division of Counseling Psychology and Education offers the credential program. (See Chapter 8 for further details.)

The Liberal Studies Program was developed by a faculty committee representing the social sciences, mathematics, natural sciences, and the humanities in consultation with faculty from the Division of Counseling Psychology and Education. The curriculum encourages critical thinking, sensitivity to human values and ethical principles, and a respect for and appreciation of diverse cultures. By learning how to learn, students in the Liberal Studies Program prepare themselves to understand a constantly changing and challenging world.

CLAD Emphasis

Nearly one-third of the total school population of California is composed of students with limited proficiency in English, and more than half are culturally and ethnically diverse. In order to meet the challenge on teaching such a diverse student population, the California Commission on Teacher Credentialing is requiring special training and support for anyone interested in teaching in California public schools. The Division of Counseling Psychology and Education now offers such preparation through the Cross-Cultural, Language, and Academic Development (CLAD) emphasis, in conjunction with the fifth-year credential program. This emphasis requires 9 quarter units of college-level language acquisition, as well as course work at both the graduate and undergraduate level. For courses that meet the undergraduate prerequisite requirements, contact the pre-teaching programs coordinator, Nedra Shunk, Liberal Studies Program.

Eastside Future Teachers Project (EFTP)

Started in 1995, EFTP is a program developed to attract Eastside Union High School District high school juniors and seniors into the teaching profession. It is hoped that EFTP will increase the number of underrepresented students who choose teaching as a career. For additional information, contact the EFTP in the Liberal Studies Program office.

REQUIREMENTS FOR MAJOR

Students should declare a major in liberal studies by the end of their freshman year and must complete at least 14 upper-division courses. A 2.6 GPA is required for admission to the program; all required courses in the major must be passed with at least a grade of C– or be repeated or substituted.

The liberal studies major requires (1) a common program of study that provides the foundation for the breadth of subjects taught in elementary school and (2) an in-depth study in one area or discipline, which may be achieved through either the completion of the programs designated below as Concentrations or a minor or major in another field. If a student chooses a second major, some of the required courses in that major may substitute for some of the following breadth requirements. In addition to the breadth requirements, all students are strongly encouraged to take History 189 (California), COMM 20 (Public Speaking), English 180 (Writing for Teachers), Sociology 153 (Race, Class, and Gender), English 104 (Teaching English as a Second Language), and Liberal Studies 134 (Psychology of Education).

Because of the complexity of the program, students are assigned two advisers, one for the liberal studies major and one from the discipline they study as a concentration, minor, or second major.

Breadth Requirements

Many of the following courses required for the major also fulfill University Curriculum or College of Arts and Sciences requirements.

1. Language Arts
   a. English 1 and 2 (Composition and Rhetoric I and II); 11 (Western Culture: Literature I); 101 (Linguistics); and one upper-division literature course that meets both the University Core Curriculum requirement for a third writing course and the state requirement for a third literature course
   b. Foreign language: completion of three quarters in one language or equivalent proficiency, which may be achieved in high school
2. Mathematics and Natural Science
   a. Math 44 and 45 (Mathematics for Elementary Teachers I and II); Math 7 (Calculus for Social Science) or Math 8 (Introduction to Statistics); Math 41 (Nature of Mathematics) or Math 6 (Finite Mathematics for Social Science)
   b. Two physics courses, including Physics 51 (Introduction to Earth Science); one biology course; and one chemistry course
3. History and Social Science
   a. One history course selected from History 7 (United States: Colonies and Constitution); History 8 (United States: The 19th Century); or History 170 (Revolution, Confederation, Constitution)
   b. One economics course
   c. Anthropology 50 (World Geography) or History 184 (American Historical Geography)

   d. One course that meets the Ethnic Studies requirement and one that meets the Women's Studies requirement, one of which must be taken in political science
4. Humanities
   a. Three religious studies courses: one introductory level, one intermediate level, and one upper-division course (advanced level) taken after achieving junior status
   b. Art History 11, 12, and 13 (the sequence fulfilling the Western Culture requirement)
   c. One ethics course in the Philosophy Department
   d. One visual arts course selected from Art 10 (Introduction to Studio Art) or a drawing or painting course
   e. One music course selected from Music 30 (Beginning Piano), 32 (Beginning Guitar), 51 (Musicianship I), 70 (Introduction to Music), or 72 (World Music Survey)
5. Child Development
   a. Psychology 185 and 186 (Developmental Psychology I and II)
   b. Liberal Studies 70 (Movement for Children)
   c. Education 98/198 (Introduction to Elementary School Teaching: Practicum)
   d. Education 138 (The Exceptional Child) or Education 163 (Introduction to Teaching in a Multicultural Society) may be substituted for 138 if 163 contains a unit on special education.
6. Liberal Studies 197 (Senior Seminar)

Concentrations

The following areas offer concentrations or in-depth study in one subject: English, mathematics, combined sciences, general social science, anthropology, economics, history, political science, psychology, sociology, art, classics, communication, French, German, Italian, Japanese, Spanish, music, philosophy, religious studies, theatre and dance, ethnic studies, international studies, women's studies, environmental studies, Catholic studies, community studies, and musical theatre.

For course requirements for the concentrations or for information about modified breadth requirements related to specific second majors, contact the program coordinator, Nedra Shunk, Department of Liberal Studies.

Urban Education

Any student majoring in liberal studies can complete a minor in urban education offered through the Division of Counseling Psychology and Education. See Chapter 8 and Chapter 9 (Pages 283–84) for requirements and course descriptions. This minor focuses on preparing students for internships in the fifth-year credential program.

LIBERAL STUDIES COURSES

70. Movement for Children

Examination of the contribution of physical movement and skill development to the learning abilities of children. Interaction of physical, social, cognitive, and motor learning.

75. Technology and Learning

Examination of the relationship between learning and technology to acquire and develop lifelong learning skills. Hands-on introduction to the computer, multimedia stations, and the Internet as learning tools and analysis of the impact of technology on society and learning.

134. Psychology of Education

Psychological principles on which effective classroom practices can be based. Human growth and development, learning theory and practice, motivation and management, effective instruction, and evaluation. Development of psychological case studies as part of the field experience. (Also listed as Education 134 and Psychology 134.)

197. Senior Seminar

Integration of methodological, epistemological, and criteriological features distinctive to the humanities, social sciences, and physical sciences using collaborative research methods. Examination of an issue of concern to U.S. elementary and secondary education. Open only to senior liberal studies majors who have completed all other program requirements or are enrolled concurrently in courses that will complete those requirements.

DEPARTMENT OF MATHEMATICS

Professors Emeriti: Karel L. de Bouvère, SCJ, Paul R. Halmos
Professors: Gerald L. Alexanderson *(Chair),* Jean J. Pedersen
Associate Professors: José Barría, Robert A. Bekes, Frank A. Farris, Leonard F. Klosinski, Dennis C. Smolarski, S.J., Tamsen Whitehead
Assistant Professors: Glenn Appleby, Daniel N. Ostrov, Edward F. Schaefer, Richard A. Scott, Katherine St. John
Senior Lecturers: Alice J. Kelly, Peter Ross
Lecturers: Stephen A. Chiappari, Jerome M. Coleman
Michael and Elizabeth Valeriote Professor: Gerald L. Alexanderson

The Department of Mathematics offers major programs leading to the Bachelor of Science in Mathematics or the Bachelor of Science in Computer Science (Mathematics), as well as required and elective courses for students majoring in other fields. Either major may be pursued with any of three principal goals: preparation for graduate studies leading to advanced degrees in mathematics, computer science, statistics, operations research, or other fields; preparation for secondary school teaching of mathematics or computer science; or preparation for a career in research in business, industry, or government. The major in mathematics may be taken with an emphasis in computer science or in mathematical economics. Minors in mathematics or computer science are also available.

For a description of the Master of Science in Applied Mathematics degree offered by the School of Engineering, see the *School of Engineering Graduate Programs* bulletin.

Students interested in careers in secondary education in mathematics should consult with the department chair early in their academic program.

REQUIREMENTS FOR MAJOR AND MINOR

For the major in either mathematics or computer science, at least four of the required upper-division courses in the major must be taken at Santa Clara.

Bachelor of Science Degree in Mathematics

In addition to completing the University Core Curriculum and College requirements for the Bachelor of Science degree, candidates for the B.S. in Mathematics must complete the following requirements:

1. Mathematics 10 (or demonstrated equivalent proficiency in computer programming), 11, 12, 13, 21, 52, and 53
2. Seven upper-division courses in mathematics, two of which must be Mathematics 102 and either 111 or 176 (or both). Mathematics 111 should be taken by students planning to do graduate work in mathematics; 176 is more suitable for students planning work in computer science or other applied areas. Students planning to undertake graduate studies in mathematics should plan to take, in addition to 102 and 111, Mathematics 105, 112, 113, 144, and 154.
3. Mathematics majors must demonstrate the ability to read a mathematical work in French, German, or Russian prior to graduation.
4. Physics 4 and 5 (Physics for Scientists and Engineers I and II), with associated laboratory sections. Students with a special interest in the application of mathematics in the social sciences or economics may substitute Economics 170, 171, or 177 for Physics 5. Students planning to teach in secondary schools may substitute, with approval of the department chair, Physics 20 and 21 (General Physics I and II) for Physics 4 and 5.

Students electing the B.S. in Mathematics with emphasis in Computer Science should take Mathematics 10 and 61, COEN 11, and at least four of the following: Mathematics 122, 123, 144, 154, 161, 162, 163, 164, 165, 166, 167, 168, 169, 176, and 177. Mathematics 22 and 32 are recommended.

Bachelor of Science Degree in Computer Science (Mathematics)

In addition to completing University and College requirements for the Bachelor of Science degree, candidates for the B.S. in Computer Science (Mathematics) must complete the following courses:

1. Mathematics 10, 11, 12, 13, 21, 22, 52, 53, 61, and 163
2. One course chosen from Mathematics 161, 166, or 167
3. One upper-division mathematics course on the following list and two upper-division mathematics courses not on the list: Mathematics 144, 161, 162, 164, 165, 166, 167, 168, 169, 176, and 177

4. Physics 4 and 5 (Physics for Scientists and Engineers I and II), with associated laboratory sections
5. COEN 11, 21, and one additional COEN upper-division course
6. One additional upper-division course, either in COEN or from the list of upper-division mathematics courses in (3) above.

Minor in Mathematics or Computer Science

The minor in mathematics requires completion of Mathematics 11, 12, 13, 21; 52 or 53; and three upper-division courses with no more than one course selected from 161–169.

The minor in computer science requires completion of Mathematics 10 and 61; 12 or 51; COEN 11 and 21; three courses selected from 144, 161–169, and 176–177.

EMPHASIS IN MATHEMATICAL ECONOMICS

The Mathematics Department offers a program providing an emphasis in mathematical economics. Students wishing to participate major in either mathematics or economics but pursue a course of study that emphasizes the use of mathematics in the study of economics. Participation in the program is noted on the student's transcript. This program is especially suited for students planning graduate work or careers in mathematical economics, actuarial science, operations research, or related fields. All students in the program must complete the following in addition to University and College requirements as well as specific requirements in their major departments:

1. Economics 14, 115, 170, 171, and 177
2. Mathematics 21, 22, 52, 53, and 102
3. Mathematics 122, 123, or Economics 174

Full descriptions of the program may be obtained from the chair of the Mathematics Department.

PREPARATION IN MATHEMATICS FOR ADMISSION TO TEACHER CREDENTIAL PROGRAMS

The state of California requires that students seeking a credential to teach mathematics or computer science in California secondary schools either pass a subject-area examination or successfully complete a state-approved Subject-Matter Preparation Program in mathematics. The credential itself requires a fifth year of study and student teaching. The Subject Matter Preparation Program in mathematics is in its final review with the Commission on Teacher Credentialing. For further information, please contact the Mathematics Department.

CLAD Emphasis

Nearly one-third of the total school population of California is composed of students with limited proficiency in English, and more than half are culturally and ethnically diverse. In order to meet the challenge of teaching such a diverse student population, the California Commission on Teacher Credentialing is requiring special training and support for anyone interested in teaching in California public schools. The Division of Counseling Psychology and Education now offers such preparation through the Cross-Cultural, Language, and Academic Development (CLAD) emphasis, in conjunction with the fifth-year credential program. This emphasis requires 9 quarter units of college-level language acquisition, as well as course work at both the graduate and undergraduate level. For courses that meet the undergraduate prerequisite requirements, contact the pre-teaching programs coordinator, Nedra Shunk, Liberal Studies Program.

HONORS PROGRAM

The Department of Mathematics maintains a program for the discovery, encouragement, and development of mathematical talent among undergraduates. This program includes special sections, seminars, individual conferences, and directed study guided by selected faculty members. Students are also encouraged to participate actively in research projects directed by faculty.

LOWER-DIVISION COURSES

Note: A grade of D in a prerequisite course in the calculus sequences (Math 11–21; Math 30–31) indicates a student is not adequately prepared for further work based on that course material. Students who receive a grade of D in the prerequisite course are therefore strongly advised not to continue with the next course until they have successfully mastered the prerequisite material. For further information, consult the mathematics faculty.

For courses with additional fees, see the Undergraduate Schedule of Classes.

6. Finite Mathematics for Social Science

Introduction to finite mathematics with applications to the social sciences. Sets, logic, combinatorial problems, probability, vectors, and matrices.

7. Calculus for Social Science

Introduction to differential and integral calculus with applications to the social sciences. Only one of Math 7, 11, or 30 may be taken for credit.

8. Introduction to Statistics

Elementary topics in statistics chosen from descriptive statistics, probability, random variables and distributions, sampling, estimation, hypothesis testing, regression, and correlation. *Prerequisite: Math 6 or equivalent.*

9. Precalculus

College algebra and trigonometry for students intending to take calculus. Does not fulfill the University Curriculum requirement; units do not apply toward the total required for graduation. *Prerequisite: permission to enroll from department chair.*

10. Introduction to Computer Science

Introduction to computer science and programming. Structured programming techniques using C++ and FORTRAN, machine structure, elementary algorithms, and data structures. Primarily (but not exclusively) for majors in computer science, mathematics, and physical sciences. Math 10 may not be taken for credit if student has received credit for a course in C++ or FORTRAN. *Prerequisite: Math 11 (may be taken concurrently).*

11. Calculus and Analytic Geometry I

Differentiation and applications, introduction to integration. Only one of Math 7, 11, or 30 may be taken for credit. *Prerequisite: four years of high school mathematics (including trigonometry) or satisfactory grade in Math 9.*

12. Calculus and Analytic Geometry II

Continuation of 11. Methods and applications of integration, transcendental functions. *Prerequisite: Math 11 or equivalent.*

13. Calculus and Analytic Geometry III

Polar coordinates, parametric equations, vector functions, partial derivatives, determinants. *Prerequisite: Math 12 or equivalent.*

21. Calculus and Analytic Geometry IV

Infinite series, multiple integrals, line integrals, Green's theorem. *Prerequisite: Math 13 or equivalent.*

22. Differential Equations

Use of series, numerical, and Laplace transform methods in solving differential equations. Applications. *Prerequisite: Math 21.*

30. Calculus for Business I

Differentiation and its applications to business, including marginal cost and profit, maximization of revenue, profit, utility, and cost minimization. Natural logarithms and exponential functions and their applications, including compound interest and elasticity of demand. Study of the theory of the derivative normally included in Math 11, except trigonometric functions not included here. Only one of Math 7, 11, or 30 may be taken for credit. *Prerequisite: three years of high school mathematics (excluding trigonometry) or satisfactory grade in Math 9.* (Math 30 does not satisfy the requirement for Math 12.)

31. Calculus for Business II

Integration and its applications to business, including consumer surplus and present value of future income. Functions of several variables and their derivatives; Lagrange multipliers and constrained optimization. Emphasis throughout the sequence on mathematical modeling, the formulation of practical problems in mathematical terms. *Prerequisite: Math 30 or equivalent.*

32. Mathematical Logic

Informal and formal methods in elementary logic. Arithmetical representations of statement calculus. Boolean algebras of sets, statements, and electrical switches. For students in computer science and/or students planning to pursue further work in logic and foundations. Recommended prerequisite for Math 133.

41. The Nature of Mathematics

For liberal arts students. Topics chosen from the theory of numbers, combinatorics, geometry, and other suitable areas. Material will generally be presented in a historical setting that allows students to participate in the discovery and development of important mathematical ideas. Emphasis on problem solving and *doing* mathematics.

44. Mathematics for Elementary Teachers I

Problem solving and logical thinking approach to whole numbers: their nature, counting, place value, computational operations, properties, and patterns. Intuitive two-dimensional geometry and measurement, especially metric. NCX†

45. Mathematics for Elementary Teachers II

Problem solving and logical thinking approach to fractional numbers, integers, rational numbers and real numbers: their nature, computational operations, properties, and patterns. Intuitive three-dimensional geometry and measurement, especially metric. Functions, relations, and graphs. *Prerequisite: Math 44 recommended but not required.* NCX†

51. Discrete Mathematics

Relations and operations on sets, orderings, elementary combinatorial analysis, recursion, algebraic structures, logic, and methods of proof. (Also listed as COEN 19.)

52. Introduction to Abstract Algebra

Groups, homomorphisms, isomorphisms, quotient groups, fields, integral domains; applications to number theory.

53. Linear Algebra

Vector spaces, linear transformations, algebra of matrices, eigenvalues and eigenvectors, and inner products. *Prerequisite: Math 13.*

61. Data Structures

Analysis of structures used for computer data storage (arrays, records, stacks, queues, linked lists, trees). Introduction to algorithms associated with various data types (sorting, searching, tree traversal, large integer arithmetic), and to general programming techniques (recursion, iteration). Math 61 and COEN 7 cannot both be taken for credit. *Prerequisite: Math 10.*

90. Lower-Division Seminars

Basic techniques of problem solving. Topics in algebra, geometry, and analysis.

UPPER-DIVISION COURSES

Note: Although Mathematics 10 is not explicitly listed as a formal prerequisite, some upper-division courses suggested for computer science (mathematics) majors may presuppose the ability to write computer programs in some language. A number of upper-division courses do not have specific prerequisites. Students planning to enroll should be aware, however, that all upper-division courses in mathematics require some level of mathematical maturity. Those without a reasonable background in lower-division courses are advised to check with instructors before enrolling.

For courses that charge fees, see the Undergraduate Schedule of Classes.

100. Writing in the Mathematical Sciences

An introduction to writing and research in mathematics. Techniques in formulating research problems, standard proof methods, and proof writing. Practice in mathematical exposition for a variety of audiences. Strongly recommended for mathematics and computer science majors beginning their upper-division course work.

101. A Survey of Geometry

Topics from projective, advanced Euclidean, and non-Euclidean geometries. Symmetry. Offered in alternate years.

102. Advanced Calculus

Vector calculus, functions of several variables, elliptic integrals, line integrals, Stokes's theorem, and the divergence theorem. *Prerequisites: Math 21 and 53.*

† Exempted from challenge

105. Theory of Functions of a Complex Variable

Analytic functions. Cauchy integral theorems, power series, conformal mapping. Riemann surfaces.

111. Abstract Algebra I

Topics from the theory of groups. Offered in alternate years. *Prerequisites: Math 52 and 53.*

112. Abstract Algebra II

Rings and ideals, algebraic extensions of fields, and the Galois theory. Offered in alternate years. *Prerequisite: Math 111.*

113. Topology

Pertinent set theory. Topological spaces, continuous functions, product spaces. Separability and compactness. Metric spaces and metric topologies. Offered in alternate years. *Prerequisite: Math 52, 53, or 102.*

122. Probability and Statistics I

Kolmogorov's axioms; conditional probability; independence; random variables; discrete and continuous probability distributions; expectation; moment-generating functions; weak law of large numbers; central limit theorem. *Prerequisite: Math 21.*

123. Probability and Statistics II

Estimation and hypothesis testing. Maximum likelihood estimation, likelihood ratio tests, and sampling from the normal distribution. Applications. *Prerequisite: Math 122.*

133. Logic and Foundations

Deductive theories. Theories and models. Consistency, completeness, decidability. Theory of models. Cardinality of models. Some related topics of metamathematics and foundations. Open to upper-division science and mathematics students and to philosophy majors having sufficient logical background. Offered in alternate years. *Prerequisite: Math 32 or equivalent.*

134. Set Theory

Naive set theory. Cardinal and ordinal arithmetic. Axiom of choice and continuum hypothesis. Axiomatic set theory. Offered in alternate years.

144. Partial Differential Equations

Linear partial differential equations with applications in physics and engineering, including wave (hyperbolic), heat (parabolic), and Laplace (elliptic) equations. Solutions on bounded and unbounded domains using Fourier series and Fourier transforms. Introduction to nonlinear partial differential equations. Offered in alternate years. *Prerequisite: Math 22.*

153. Intermediate Analysis I

Rigorous investigation of the real number system. Concepts of limit, continuity, differentiability of functions of one real variable, uniform convergence, and theorems of differential and integral calculus. Offered in alternate years. *Prerequisite: Math 102.*

154. Intermediate Analysis II

Continuation of Mathematics 153. Offered in alternate years.

155. Ordinary Differential Equations

Solutions to systems of linear differential equations. Behavior of nonlinear autonomous two-dimensional systems. Uniqueness and existence of solutions. Offered in alternate years. *Prerequisite: Math 102.*

161. Theory of Automata and Languages I

Classification of automata, formal languages, and grammars. Chomsky hierarchy. Representation of automata and grammars, BNF. Deterministic and nondeterministic finite state automata. Regular expressions and languages. Pushdown automata. Context-free languages. Context-sensitive grammars and linear bounded automata. Recursively enumerable languages. Turing machines; normal

forms; undecidability. Offered in alternate years. *Prerequisites: Math 52 and 61 or equivalent.*

162. Theory of Automata and Languages II

Continuation of Math 161. Offered in alternate years. *Prerequisite: Math 161.*

163. Theory of Algorithms

Preliminaries: measuring work done by algorithms. Nonnumerical algorithms: searching, sorting, graph spanning and traversal, string matching. Numerical topics: polynomial and matrix arithmetic. NP-completeness. *Prerequisites: Math 51 or 52, and 61 or equivalent.* (Also listed as COEN 179.)

164. Computer Simulation

Techniques for generation of probability distributions. Computer models of queueing in inventory and scheduling. Simulation of economic systems. Monte Carlo methods for physical systems. Offered in alternate years. *Prerequisite: the ability to program in some scientific language.* NCX†

165. Linear Programming

Algebraic background. Transportation problem. General simplex methods. Linear programming and theory of games. Numerical methods. Offered in alternate years.

166. Numerical Analysis

Numerical algorithms and techniques for solving mathematical problems. Linear systems, integration, approximation of functions, solution of nonlinear equations. Analysis of errors involved in the various methods. Direct methods and iterative methods. *Prerequisite: the ability to program in some scientific language.*

167. Switching Theory and Boolean Algebra

Switching algebra and Boolean algebra. Minimization via Karnaugh maps and Quine-McCluskey, state compatibility and equivalence. Machine minimization. Faults. State identification, finite memory, definiteness, information losslessness. Offered in alternate years.

168. Computer Graphics

Systematic and comprehensive overview of interactive computer graphics such as mathematical techniques for picture transformations and curve and surface approximations. *Prerequisite: the ability to program in some scientific language. Math 53 recommended but not required.*

169. Programming Languages

Comparative study of major classes of programming languages. Introduction to theoretical definitions of languages and run-time concerns, with emphasis on good points and deficiencies of various languages and on using the appropriate language for a given task. Programs written in several languages (e.g., FORTRAN, LISP, SNOBOL, COBOL, C, Path-Pascal). Offered in alternate years.

170. Development of Mathematics

A selection of mathematical concepts with their historical context. *Prerequisite: upper-division standing in a science major.*

172. Problem Solving

Use of induction, analogy, and other techniques in solving mathematical problems. Offered in alternate years.

174. Differential Geometry

Introduction to curves and surfaces. Frenet-Serret formulas, Gauss' *Theorema Egregium,* Gauss-Bonnet theorem. Offered in alternate years. *Prerequisite: Math 53.*

175. Theory of Numbers

Fundamental theorems on divisibility, primes, congruences. Number theoretic functions. Diophantine equations. Quadratic residues. Partitions. Offered in alternate years. *Prerequisite: Math 52.*

† Exempted from challenge

176. Combinatorics

Permutations and combinations, generating functions, recursion relations, Pólya counting theorem, the 12-fold way, and a selection of topics from combinatorial geometry, graph enumeration, combinatorial species, and algebraic combinatorics.

177. Graph Theory

Selected topics from planarity, connectedness, trees (enumeration), digraphs, graph algorithms, and networks. Offered in alternate years.

178. Cryptography

History, cryptanalysis, and running time analysis. Classical cryptosystems, RSA, DES, discrete log over finite fields and elliptic curves, stream ciphers and signatures.

190. Upper-Division Seminars

Advanced topics in algebra, geometry, or analysis. Research projects. May be repeated for credit.

196. Advanced Topics

Offered each year in an advanced area of mathematics not ordinarily covered in the regularly offered courses. Often an area of current interest. May be repeated for credit.

198. Internship/Practicum

Guided study related to off-campus practical work experience in computer science, mathematics, or statistics. Enrollment restricted to majors or minors of the department. *Prerequisite: approval of a faculty sponsor.*

199. Independent Study

Reading and investigation for superior students under the direction of a staff member. This can be used only to extend, not to duplicate, the content of other courses. May be repeated for credit.

DEPARTMENT OF MODERN LANGUAGES AND LITERATURES

Professors: Francisco Jiménez *(Chair),* Catherine R. Montfort, Victor B. Vari
Associate Professors: Rose Marie Beebe, Maryellen Toman Mori, Andrew I. Rematore, Tonia Caterina Riviello, KG Seely, Gudrun Tabbert-Jones, Christian L. van den Berghe
Assistant Professors: Josef Hellebrandt, Linda I. Koski
Lecturers: Gloria E. Li, Lucía T. Varona
Phil and Bobbie Sanfilippo Professor: Francisco Jiménez
Harold and Edythe Toso Professor: Victor B. Vari

The Department of Modern Languages and Literatures offers courses in French, German, Italian, Japanese, and Spanish. The courses are designed to help students achieve proficiency in both the oral and written language and to provide them with an understanding of the experiences, values, and traditions of those peoples whose languages are studied. Courses range from beginning language to linguistics, from an introduction to literary texts to advanced courses in literature and culture. All courses are open to any student with the requisite preparation.

MAJORS AND MINORS

The Department of Modern Languages and Literatures offers the Bachelor of Arts degree with a major in French, German, Italian, or Spanish. An academic minor is available in French, German, Italian, Spanish or Japanese. For particulars, see the entries on the individual languages.

SUBJECT-MATTER PREPARATION FOR ADMISSION TO TEACHING CREDENTIAL PROGRAMS

Coordinators:
French: KG Seely
German: Gudrun Tabbert-Jones
Spanish: Linda I. Koski

The state of California requires that students seeking a credential to teach French, German, or Spanish in California secondary schools either pass a subject-area examination or successfully complete the state-approved Subject-Matter Preparation Program in the language to be taught. The credential itself requires a fifth year of study and teaching.

Subject-Matter Preparation programs approved by the state of California are presently being revised by the Department of Modern Languages and Literatures in French, German, and Spanish. Students interested in one of these programs should consult with the department at an early date.

Note: Admission to fifth-year credential programs requires practicum work and/or experience in school-related settings. Students can meet this requirement by enrolling in Education 98/198B.

CLAD Emphasis

Nearly one-third of the total school population of California is composed of students with limited proficiency in English, and more than half are culturally and ethnically diverse. In order to meet the challenge of teaching such a diverse student population, the California Commission on Teacher Credentialing is requiring special training and support for anyone interested in teaching in California public schools. The Division of Counseling Psychology and Education now offers such preparation through the Cross-Cultural, Language, and Academic Development (CLAD) emphasis, in conjunction with the fifth-year credential program. This emphasis requires 9 quarter units of college-level language acquisition, as well as course work at both the graduate and undergraduate level. For courses that meet the undergraduate prerequisite requirements, contact the pre-teaching programs coordinator, Nedra Shunk, Liberal Studies Program.

HIGH SCHOOL CREDIT AND PLACEMENT

The Department of Modern Languages and Literatures recommends the following formula for students who wish to continue a language studied in high

school. Those who have had two years of language should enter Language 2; those with four years of language should enter Language 22; those with three years of language should consult the language faculty. Students whose language background is inadequate to permit following the above formula may be permitted to enter lower-numbered courses for credit after consultation with a member of the language faculty.

Students having the necessary proficiency, as demonstrated by an interview with a member of the language faculty, may enroll in higher-numbered courses than those of the placement formula. Once proficiency has been established, lower-division students may enroll in upper-division courses with the permission of the instructor. Such courses will be counted as fulfilling major or minor requirements.

COURSES EXEMPTED FROM CHALLENGE

Courses numbered 1 through 102 are not open to challenge; for courses numbered above 102, consult the individual listing.

E. L. WIEGAND LEARNING CENTER

Course work is supplemented in all language programs by activities in the interactive, multimedia E. L. Wiegand Learning Center. Specific requirements vary by course.

CONVERSATION GROUPS

As an adjunct to many language courses, the department offers students the opportunity to participate in small conversation groups of five or six students under the direction of a native speaker or an advanced major.

STUDY ABROAD

Study abroad is a valuable enhancement of the undergraduate experience, and is particularly recommended for students pursuing a major or minor in a foreign language. Early planning, in consultation with both the Office of International Programs and the student's foreign language adviser, is essential to ensure appropriate integration of the work done abroad into the student's program of study.

FRENCH MAJOR AND MINOR

In addition to University Core Curriculum and College requirements for the Bachelor of Arts degree and such lower-division courses as the individual candidate may need, the French major consists of a minimum of 40 quarter units of upper-division work in French language, literature, and culture, including French 100 and 101 (Advanced French I and II) or their equivalents, as approved by the student's major adviser. One upper-division course in French literature taught in English may be included among the 40 quarter units required for the major as

long as it contains a French component. Recommended electives include courses in French or European history, comparative literature, art history, and linguistics.

The minor in French requires, in addition to such lower-division courses as the student may need, completion of a minimum of 19 quarter units of upper-division work in French, including French 100 and 101 or department-approved substitutes. One upper-division course in French literature taught in English may be included among the 19 quarter units required for the minor as long as it contains a French component.

At least 20 of the 40 upper-division units taken for the major and at least 10 of the 19 upper-division units taken for the minor must be earned in courses taught by Santa Clara University faculty. Students must achieve a 2.0 grade point average in upper-division courses taken in fulfillment of a French major or minor.

COURSE DESCRIPTIONS

1. Elementary French I

Development of skills in understanding, speaking, reading, and writing French. Language laboratory required.

2. Elementary French II

Continuation of French 1.

3. Elementary French III

Completion of elementary French.

21. Intermediate French I

The first course in a three-part review of the fundamentals of spoken and written French. Readings in original prose. Emphasis on culture. *Prerequisite: French 3 or equivalent.*

22. Intermediate French II

Continuation of the review of the French language. Readings and discussion of short stories and plays.

50. Intermediate French Conversation

A course concentrating on the development of the students' ability to speak French. No auditors. *Prerequisite: French 22 or equivalent.*

100. Advanced French I

Completion of the review of the French language begun in French 21. Emphasis on spoken French. Research projects and/or participation in theatricals. Required of all majors and minors.

101. Advanced French II

Introduction to literary analysis in poetry, prose, and drama. Required of all majors and minors. (May be taken concurrently with certain other upper-division courses.)

106. Advanced French Conversation

Intensive work stressing the single skill of French conversation in everyday situations. No auditors. *Prerequisite: French 100.* NCX†

108. French Business Culture and Institutions

Basic French business terminology and practices. Business letter writing emphasized. Examination of French business institutions (agriculture, finance, advertising, transportation, etc.). Special emphasis on understanding the underlying cultural mores that make French business different from U.S. business.

110. Culture and Civilization I

Cultural, political, economic, artistic, educational, and social aspects of France. Offered in alternate years.

111. Culture and Civilization II

Cultural, political, economic, educational, and social aspects of Francophone coun-

† Exempted from challenge

tries. Exploration through literary works and films of issues involving nationalism, race, gender, identity, and alienation. Geographic areas include the Caribbean, North Africa, sub-Saharan Africa, Quebec, and Vietnam. May be taken independently from French 110. Offered in alternate years.

112. Francophone Culture and Civilization: Africa and the Caribbean

A study of the political, social, and literary history of French-speaking Africa and the Caribbean (with a focus on Guadaloupe and Martinique). Explores the issues of identity crisis and cultural alienation in the works of leading writers. Conducted in English.

115. Survey of French Literature I

Readings in French literature from its beginnings in the Moyen Age to the end of the 18th century, with a particular focus announced each time the course is offered. Rotated topics include the theme of love, the comic, the writer's relationship to society, etc.

116. Survey of French Literature II

Continuation of French 115. Readings in French literature of the 19th and 20th centuries, with a particular focus announced each time the course is offered. Rotated topics include contemporaneous art, ideological undercurrents, experimentation (literary and dramatic), etc. May be taken independently from French 115.

120. Moyen Age

Epic, lyric, and courtly literature of medieval France: Roland, *l'amour courtois* and the Troubadours, Chrétien de Troyes, *Tristan et Iseut,* Artur, the early theatre.

130. 16th Century

La Renaissance: readings in Rabelais, the Pléiade poets, and Montaigne.

140. 17th Century

Le Grand Siècle: evolution of literary and philosophical currents. Emphasis on Corneille, Racine, Molière, La Fontaine, Descartes, Pascal, etc.

150. 18th Century

Le Siècle des lumières: studies in the literature and thought of the Age of Enlightenment. Emphasis on Montesquieu, Voltaire, Diderot, and Rousseau.

160. 19th Century I

Romantic literature: prose and poetry (Chateaubriand, Stendhal, Lamartine, Hugo, Balzac, Vigny, etc.).

161. 19th Century II

Realist, Naturalist, and Symbolist literature (Baudelaire, Flaubert, Zola, Mallarmé, etc.).

170. 20th Century I

Writings of *la belle époque* and *entre deux guerres* (Proust, Gide, Apollinaire, Dada, Surrealism, etc.).

171. 20th Century II

The *engagée* literature, the Anti-theatre, the New Novel, and current directions (Anouilh, Sartre, Camus, Ionesco, Robbe-Grillet, Tournier, etc.).

172. Cinéma

Origins and development of the art of film in France. Not a film-making course. Evolution of cinematic techniques as exemplified in the feature films of individual directors. Weekly screenings with discussions, analyses, and *travaux pratiques.* No unofficial auditors.

180. Seminars

Variable topics in culture, literature, and film. May be retaken for credit.

182. Women in French Literature: Authors and Characters‡

Literary analysis of the woman question, formulated through the works of major

‡ Course included in Women's Studies Program

French writers, both female and male, such as Marie de France, Mme de Lafayette, Choderlos de Laclos, Maupassant, Colette, Marguerite Duras, and Simone de Beauvoir. Readings set against the backdrop of the Monarchy, the French Revolution of 1789, and the Napoleonic regime emphasize an emerging feminist awareness that found expression not only through political activism but also through literature.

183. 20th-Century French Women Writers‡

The varied literary contributions of French and Francophone writers such as Colette, Simone de Beauvoir, Marguerite Duras, Elisabeth Badinter, Gabrielle Roy, Mariama Bâ; their differing perceptions of the traditional stereotypes of women and perspectives related to social class. Consideration of whether feminine literature has unique qualities.

184. 20th-Century French Women Writers in Translation‡

The varied literary contributions of French and Francophone writers. Readings selected mainly from writers of the second half of the 20th century. Consideration of whether feminine literature has unique qualities. Course taught in English but will contain a French component for French majors and minors. (Also listed as English 169.)

185. French Applied Linguistics

Aspects of modern French linguistics (phonology, phonetics, morphology, syntax). Contrastive analysis. Required for students in the French Subject-Matter Preparation Program. Offered in alternate years.

198. Directed Study

Individually designed programs of advanced study. Restricted to seniors who are declared French majors or minors and who find themselves in special circumstances. May be taken only once. Courses exempted from challenge may not be taken as Directed Study. *Written course outline must be approved by instructor and department chair in advance of registration.* (1–3 units)

199. Directed Reading

Individually designed programs of advanced readings. *Written permission of the instructor and department chair is required in advance of registration.*

GERMAN MAJOR AND MINOR

In addition to University Curriculum and College requirements for the Bachelor of Arts degree and such lower-division courses as the individual candidate may need, the German major consists of a minimum of 40 quarter units of upper-division work in German language and literature, including German 100 and 101 (Advanced German I and II) or their equivalents. All major programs must be approved by the student's faculty adviser. Recommended elective courses include English 101 (Linguistics), English 102 (Theories of Modern Grammar), and History 128 or 129 (Germany).

The minor in German requires, in addition to such lower-division courses as the student may need, completion of a minimum of 19 quarter units of upper-division work in German, including German 100 and 101 or department-approved substitutes.

At least 20 of the 40 upper-division units taken for the major and at least 10 of the 19 upper-division units taken for the minor must be earned in courses taught

‡ Course included in Women's Studies Program

by Santa Clara University faculty. Students must achieve a 2.0 grade point average in upper-division courses taken in fulfillment of a German major or minor.

COURSE DESCRIPTIONS

1. Elementary German I

Development of skills in understanding, speaking, reading, and writing modern German. Cultural information on the German-speaking countries. Language laboratory required.

2. Elementary German II

Continuation of German 1.

3. Elementary German III

Completion of elementary German.

5. German for Reading Knowledge

Alternate to German 3 leading to the reading of scholarly articles in various fields of study. *Prerequisite: German 2 or equivalent.*

21. Intermediate German I

Review of German grammar, short stories, or essays on culture and civilization. Progressive exercises in conversation.

22. Intermediate German II

Continuation of German 21. Accelerated readings, conversation, and writing.

100. Advanced German I

Advanced reading, composition, and conversation. Emphasis on conversation and career-oriented language. Required of all majors and minors.

101. Advanced German II

Reading of literary texts, composition, and discussion. Required of all majors and minors. Completion or equivalent knowledge admits students to higher-numbered courses.

110. History of German Civilization

Cultural history of the German-speaking countries from earliest times to 1945.

111. Contemporary German Civilization

Geography, culture, education, politics, and the economy in the German-speaking countries since 1945.

130. The Classical Age

Major works by Goethe and Schiller.

140. 19th-Century Romanticism

Philosophy of the Romantics. German fairy tale. Selected works by Kleist, Eichendorff, Heine, and Wagner.

141. 19th-Century Realism

Works by Büchner, Hebbel, Fontane, Marx, and Hauptmann.

150. 20th-Century Novel

Works by Kafka, Hesse, Thomas Mann, Christa Wolf, Böll, and others.

151. 20th-Century Drama

Plays by Brecht, Borchert, Frisch, and Dürrenmatt and Brecht's theoretical writings.

160. The German Novelle

Characteristic features of the *Novelle* as opposed to *Roman* and *Erzählung.* Examples from Theodor Storm to Thomas Mann.

161. Survey of Lyric Poetry

Introduction to the analysis of poetry. Numerous examples from all German literary periods beginning with 1600.

175. German Applied Linguistics

Modern German linguistics. Emphasis on phonology, phonetics, and contrastive analysis of German and English.

180. Special Topics

Variable topics in culture and literature. May be retaken for credit.

182. Women in German Literature: Authors and Characters‡

Works by and about German women. Authors studied include Droste-Hulshof, Böll, Wolf, Handke, Kaschnitz, Wander, and others.

198. Directed Study

Individually designed programs of advanced study. Restricted to seniors who are declared German majors or minors and who find themselves in special circumstances. May be taken only once. Courses exempted from challenge may not be taken as Directed Study. *Written course outline must be approved by instructor and department chair in advance of registration.* (1–3 units)

199. Directed Reading

Individually designed programs of advanced readings. *Written permission of the instructor and department chair is required in advance of registration.*

Literature in Translation

Note: Literature in translation courses are taught in English and cannot be used as credit toward a German major, minor, or foreign language requirement.

115. German Literature in English Translation

Reading and analysis of masterpieces of German literature written between 1750 and 1970. Selection dependent upon available translations.

ITALIAN MAJOR AND MINOR

In addition to University Core Curriculum and College requirements for the Bachelor of Arts degree and such lower-division courses as the individual candidate may need, the Italian major consists of a minimum of 40 quarter units of upper-division work in Italian language and literature, including Italian 100 and 101 (Advanced Italian I and II) or their equivalents. All major programs must be approved by the student's faculty adviser. Recommended electives include courses in mythology, comparative literature, and Renaissance history.

The minor in Italian requires, in addition to such lower-division courses as the student may need, completion of a minimum of 19 quarter units of upper-division work in Italian, including Italian 100 and 101 or department-approved substitutes.

At least 20 of the 40 upper-division units taken for the major and at least 10 of the 19 upper-division units taken for the minor must be earned in courses taught by Santa Clara University faculty. Students must achieve a 2.0 grade point average in upper-division courses taken in fulfillment of an Italian major or minor.

‡ Course included in Women's Studies Program

COURSE DESCRIPTIONS

1. Elementary Italian I

Development of skills in understanding, speaking, reading, and writing modern Italian. Language laboratory required.

2. Elementary Italian II

Continuation of Italian 1.

3. Elementary Italian III

Completion of elementary Italian.

15. Italian Conversation and Composition

Intensive work stressing the skills of spoken and written Italian in everyday situations. No prerequisite. Summer course; offered *only* in Assisi, Italy.

21. Intermediate Italian I

Review of fundamentals of spoken and written Italian. Progressive readings reflecting Italian culture and values. Progressive exercises in conversation and composition. *Prerequisite: Italian 3 or equivalent.*

22. Intermediate Italian II

Continuation of Italian 21.

62. Survey of Italian Culture and Civilization

Highlights of Italian history, geography, art, music, and culture from their origins to the present. Summer course; offered *only* in Assisi, Italy.

100. Advanced Italian I

Composition, reading, and conversation. Required of all majors and minors. *Prerequisite: Italian 22.*

101. Advanced Italian II

Continuation of Italian 100. Required of all majors and minors.

110. Italian Civilization I

Fundamental aspects of Italian history, art, and culture from their origins to the *seicento.*

111. Italian Civilization II

Continuation of Italian 110. May be taken independently. From the *settecento* to the present.

112. Survey of Italian Culture and Civilization

Highlights of Italian history, geography, art, music, and culture from their origins to the present. Summer course; offered *only* in Assisi, Italy. *Prerequisite: Italian 100.*

113. Cinema e Cultura‡

A cultural portrait of modern Italy as reflected in its cinema. Films by Roberto Rossellini, Luchino Visconti, Vittorio De Sica, Michelangelo Antonioni, Federico Fellini, the Taviani brothers, Francesco Rosi, Bernardo Bertolucci, and Liliana Ginanneschi illustrate cultural and intellectual change in the 20th century.

120. Survey of Italian Literature I

From its origin to the *seicento.*

121. Survey of Italian Literature II

From the *settecento* to the present.

130. Dante, La Divina Commedia I

Inferno and *Purgatorio.*

131. Dante, La Divina Commedia II

Purgatorio and *Paradiso.*

140. Duecento, Trecento

Emphasis on Dante's minor works, Petrarch's poetry, and Boccaccio's *Decameron.*

‡ Course included in Women's Studies Program

150. Quattrocento, Cinquecento (Rinascimento)

Important trends in the literary masterpieces of the Renaissance. Significant works of Ariosto, Tasso, Leonardo, Machiavelli, Lorenzo de Medici, Poliziano, Castiglione.

160. Settecento

Salient works of Vico, Goldoni, Parini, and Alfieri.

170. Ottocento, I Promessi Sposi

Discussion of the works of Foscolo, Leopardi, Manzoni's poetry. Carducci, Pascoli, and Verga.

180. Novecento

Italian literature of the 20th century. Main trends in poetry, drama, and the novel from Pirandello to the present.

182. 20th-Century Italian Women Writers‡

Critical analysis of major works by leading women writers and the changing role of women in 20th-century Italian society: Grazia Deledda, Sibilla Aleramo, Elsa Morante, Natalia Ginzburg, Oriana Fallaci, Maria Bellonci, Giuliana Morandini, Dacia Maraini, Laudomia Bonanni, Lalla Romano, Francesca Duranti, Isabella Bossi Fedrigotti, and Gina Lagorio.

198. Directed Study

Individually designed programs of advanced study. Restricted to seniors who are declared Italian majors or minors and who find themselves in special circumstances. May be taken only once. Courses exempted from challenge may not be taken as Directed Study. *Written course outline must be approved by instructor and department chair in advance of registration.* (1–3 units)

199. Directed Reading

Individually designed programs of advanced readings. *Written permission of the instructor and department chair is required in advance of registration.*

Literature and Culture in Translation

Note: Literature and culture in translation courses are taught in English and cannot be used to fulfill the foreign language requirement.

80. Topics in Italian Culture

Variable topics in Italian culture and literature, offered in the Casa Italiana and required of Casa residents. May be retaken for credit. P/NP grading only. No auditors. (1 unit)

JAPANESE MINOR

In addition to such lower-division courses as the student may need, the minor in Japanese requires a minimum of 19 quarter units of upper-division work in Japanese, including Japanese 100, 101, and 102 (Advanced Japanese I, II, and III) or department-approved equivalents. One upper-division course in Japanese literature taught in English may be included among the 19 units required for the minor. Interested students should consult with the Japanese section head.

‡ Course included in Women's Studies Program

At least 10 of the 19 upper-division units taken for the Japanese minor must be earned in courses taught by Santa Clara University faculty. Students must achieve a 2.0 grade point average in upper-division courses taken in fulfillment of the Japanese minor.

COURSE DESCRIPTIONS

1. Elementary Japanese I

Development of skills in understanding, speaking, reading, and writing modern Japanese. Language laboratory required.

2. Elementary Japanese II

Continuation of Japanese 1.

3. Elementary Japanese III

Completion of elementary Japanese.

21. Intermediate Japanese I

New grammatical structures and additional Chinese written characters. Progressive exercises to develop facility in conversation, reading, and composition. *Prerequisite: Japanese 3 or equivalent.*

22. Intermediate Japanese II

Continuation of Japanese 21.

23. Intermediate Japanese III

Completion of intermediate Japanese. *Prerequisite: Japanese 22.*

100. Advanced Japanese I

Continued practice in using complex grammatical structures. Reading and discussion of topics taken from a variety of sources. *Prerequisite: Japanese 23 or equivalent.*

101. Advanced Japanese II

Continuation of Japanese 100. *Prerequisite: Japanese 100 or equivalent.*

102. Advanced Japanese III

Completion of advanced Japanese. *Prerequisite: Japanese 101 or equivalent.*

113. Readings in Japanese I

Readings and discussions in Japanese of selected sociological, literary, and journalistic texts.

114. Readings in Japanese II

Continuation of Japanese 113. *Prerequisite: Japanese 113 or equivalent.*

115. Readings in Japanese III

Completion of readings in Japanese. *Prerequisite: Japanese 114 or equivalent.*

198. Directed Study

Individually designed programs of advanced study. Restricted to seniors who are declared Japanese minors and who find themselves in special circumstances. May be taken only once. Courses exempted from challenge may not be taken as Directed Study. *Written course outline must be approved by instructor and department chair in advance of registration.* (1–3 units)

199. Directed Reading

Individually designed programs of advanced readings. *Written permission of instructor and department chair required in advance of registration.*

Literature in Translation

Note: Literature in translation courses are taught in English and cannot be used to fulfill the foreign language requirement. One course may be counted toward the Japanese minor.

125. Colloquium: Japanese Literature and Culture

Topic varies. Study and discussion of selected themes in Japanese literature and culture. May be retaken for credit. NCX†

140. Modern Japanese Literature in Translation

Major literary figures and trends from 1868 to the present. Particular attention to the interaction between traditional and modern social and literary values. (Also listed as English 169.)

150. Postwar Japanese Literature in Translation

Major literary trends and representative fictional works since World War II that reflect Japan's transformation from a devastated Third World nation to a prosperous cosmopolitan society. (Also listed as English 169.)

182. Japanese Women's Literature in Translation‡

Introduction to representative works of fiction by major women writers. Traces the evolution of feminist consciousness in these writings. (Also listed as English 169.)

SPANISH MAJOR AND MINOR

In addition to University Core Curriculum and College requirements for the Bachelor of Arts degree and such lower-division courses as the individual candidate may need, the Spanish major consists of a minimum of 40 quarter units of upper-division work in Spanish language, literature, and culture, including

1. Spanish 100 and 101 (Advanced Spanish I and II)
2. Spanish 175 (Spanish Applied Linguistics I)
3. At least one (but not more than three) from Spanish 120, 121, 130, 131
4. Additional electives in Spanish to total 40 quarter units, chosen with the approval of the Spanish adviser (Every program must include both Latin American and Spanish Peninsular literature or culture.)

Additional course limitations may apply, depending on career objectives. Courses in the history of Latin America and Spain are recommended.

The minor in Spanish requires, in addition to such lower-division courses as the student may need, completion of a minimum of 19 quarter units of upper-division work in Spanish, including Spanish 100 and 101 or department-approved substitutes and at least one course in Hispanic literature or culture.

At least 20 of the 40 upper-division units taken for the major and at least 10 of the 19 upper-division units taken for the minor must be earned in courses taught by Santa Clara University faculty. Students must achieve a 2.0 grade point average in upper-division courses taken in fulfillment of a Spanish major or minor.

† Exempted from challenge ‡ Course included in Women's Studies Program

COURSE DESCRIPTIONS

1. Elementary Spanish I

Designed for those having no previous study of Spanish. Development of skills in understanding, speaking, reading, and writing modern Spanish, in that order. Development of an understanding of Hispanic culture.

2. Elementary Spanish II

Continuation of Spanish 1.

3. Elementary Spanish III

Completion of elementary Spanish.

21. Intermediate Spanish I

The first course in a three-part review of the fundamentals of spoken and written Spanish. Progressive readings and exercises in conversation and composition. Development of an understanding of Hispanic culture. *Prerequisite: Spanish 3 or three years of high school Spanish.*

22. Intermediate Spanish II

Continuation of the review of Spanish structure, together with progressive development of all Spanish skills. Broadening appreciation of Hispanic culture through reading and discussion of literary works. *Prerequisite: Spanish 21 or four years of high school Spanish.*

23. Intermediate Spanish III

Completion of intermediate Spanish. *Prerequisite: Spanish 22 or equivalent.*

100. Advanced Spanish I

Continued development of all Spanish skills at an advanced level. Special attention to composition. Systematic introduction to literary analysis. Required of all majors and minors. *Prerequisite: Spanish 23 or equivalent.*

101. Advanced Spanish II

Continued development of all Spanish skills and completion of the introduction to literary analysis begun in Spanish 100. Required of all majors and minors. *Prerequisite: Spanish 100 or equivalent.*

Prerequisites: Completion of Spanish 100 and 101 or evidence of equivalent preparation will admit students to higher-numbered courses.

107. Advanced Spanish Composition

Intensive systematic development of the forms of discourse in Spanish. *Prerequisites: Spanish 100 and 101 or equivalent.* NCX†

110. Advanced Spanish Conversation

Advanced work stressing the development of self-expression in Spanish. *Prerequisite: Spanish 101 or equivalent and permission of the instructor.* NCX†

112. Mexican Culture

Mexican literature, fine arts, history, and social developments, with particular attention to cultural values.

120. Major Works of Spanish Literature I

Readings in Spanish literature from the early forms of Spanish literature to the end of the 17th century.

121. Major Works of Spanish Literature II

Readings in Spanish literature of the 18th and 19th centuries. Continuation of Spanish 120. May be taken separately.

122. The Spanish Picaresque Novel

A study of the development of the Spanish picaresque novel and its influence on other European literatures. Key works, analyzed from a sociohistorical perspective, include *Lazarillo de Tormes* (1554), *El Guzmán de Alfarache* (1599), and *El Buscón* (1626).

† Exempted from challenge

123. Siglo de Oro Drama

A study of the Spanish *comedia* of the *Siglo de Oro*. Particular emphasis on the impact of Lope de Vega and the creation of a national theatre. Literary analysis of the *comedias* of the most representative Spanish dramatists of the period: Calderón de la Barca, Rojas Zorilla, Tirso de Molina, Ruiz de Alarcón, Guillén de Castro, and Lope de Vega.

124. Realism in the 19th-Century Spanish Novel

A study of the decline of Romanticism and the evolution of the Realist movement in 19th-century Spain. Special emphasis on the novels of Fernán Caballero, Alarcón, Galdós, and Valera.

125. Colloquium: Spanish Literature and Culture

Topic varies. Study and discussion of selected themes in Spanish Peninsular literature and culture. May be retaken for credit. NCX†

130. Survey of Latin American Literature I

Latin American literature from the pre-Columbian period to 1888.

131. Survey of Latin American Literature II

Latin American literature from 1888 to present.

133. Mexican American Literature§

Reading, analysis, and discussion of Mexican American literature. Emphasis on the novel and short story.

135. Colloquium: Latin American Literature and Culture

Topic varies. Reading and discussion of selected themes in Latin American literature and culture. May be retaken for credit. NCX†

140. Modern Latin American Literature I

Reading, analysis, and discussion of the works of major Latin American writers of the early 20th century (e.g., Gallegos, Barrios, Prado, and Romero).

141. Modern Latin American Literature II

Reading, analysis, and discussion of the works of major Latin American writers of the late 19th and early 20th centuries. Emphasis on the novel.

145. Mid-20th-Century Latin American Literature

Reading, analysis, and discussion of the works of major Latin American writers from 1946 to 1962. Carpentier, Yáñez, Fuentes, and others.

146. Contemporary Latin American Literature

Reading, analysis, and discussion of the works of major contemporary Latin American writers—García Márquez, Vargas Llosa, and others.

148. 20th-Century Latin American Women Writers‡

Reading, analysis, and discussion of novels and short fiction by major Latin American women writers of the 20th century (e.g., Bombal, Garro, Poniatowska, Allende, Valenzuela, and others).

150. 20th-Century Spanish Literature I

Major writers of Spain from 1898 to 1936. Particular emphasis on the Generation of 1898.

151. 20th-Century Spanish Literature II

Major writers of Spain from 1936 to the present.

† Exempted from challenge § Course included in Ethnic Studies Program
‡ Course included in Women's Studies Program

165. Cervantes: Don Quijote

Cervantes' masterpiece, as a reflection of Spanish society during the Spanish Empire, an exemplar of Baroque art and a synthesis and culmination of narrative prose.

175. Spanish Applied Linguistics I

Introduction to the study of applied linguistics. Detailed scientific analysis of the phonology of modern Spanish. Contrastive analysis of Spanish and English sound systems. Required of all majors and of all prospective teachers of Spanish.

176. Spanish Applied Linguistics II

Detailed scientific analysis of the morphology and syntax of modern Spanish. Contrastive analysis within the Spanish structure system and between the Spanish and English structure systems. *Prerequisite: Spanish 175.* Required of all prospective teachers of Spanish.

198. Directed Study

Individually designed programs of advanced study. Restricted to seniors who are declared Spanish majors or minors and who find themselves in special circumstances. May be taken only once. Courses exempted from challenge may not be taken as Directed Study. *Written course outline must be approved by instructor and department chair in advance of registration.* (1–3 units)

199. Directed Reading

Individually designed programs of advanced readings. *Written permission of the instructor and department chair is required in advance of registration.*

Literature in Translation

Note: Literature in translation courses are taught in English and cannot be used as credit toward a Spanish major, minor, or foreign language requirement.

115. 20th-Century Mexican Literature in Translation

Reading, analysis, and discussion of outstanding works by modern and contemporary Mexican writers. Emphasis on the novel.

117. Latin American Literature in Translation

Reading, analysis, and discussion of works of leading Latin American writers. Emphasis on contemporary novelists of South America.

MODERN LITERATURE AND CULTURE

Note: Knowledge of a foreign language is not necessary for the following comparative course. It cannot be used to fulfill a major or minor requirement in a foreign language or to fulfill the foreign language requirement.

180. International Cinema

An interdisciplinary course treating film as a medium of cultural expression in China, England (or Australia or Canada), France, Germany, Italy, Japan, Latin America, Russia, and Spain.

DEPARTMENT OF MUSIC

Associate Professors: Hans C. Boepple *(Chair)*, Nancy Wait Kromm, Teresa McCollough, Lynn R. Shurtleff
Adjunct Lecturers: Leroy Kromm, Henry Mollicone

The Department of Music at Santa Clara University is committed to the education of the whole person: intellectual, emotional, physical, and spiritual. The goal of the Department of Music is to provide an intellectual and stimulating artistic environment, which fosters individual expression and creativity through the study of music and musical performance. Inasmuch as music is a fundamental characteristic of the human experience and an important component of the liberal arts education within the context of a Jesuit university, the curriculum is designed to provide students of diverse backgrounds with the skills necessary not only to understand and to perform music but also to appreciate music's role in human history and its potential enhancement of the lives of all people.

The Bachelor of Arts in Music can provide preparation for many career options. Classes providing essential skills for the comprehension and performance of music are offered alongside courses designed to create an appreciation for music's changing role in our communities. Graduates in music have pursued careers in musical performance, pedagogy, theory, musicology, and arts administration, as well as careers outside of music in medicine, law, engineering, business, and the humanities. The Department of Music eagerly supports all majors and minors who find the discipline, creativity, and spirituality inherent in the study of music to be a valuable part of their education and their life goals.

Santa Clara University is an accredited member of the National Association of Schools of Music.

REQUIREMENTS FOR MAJOR AND MINOR

Bachelor of Arts with a Major in Music

Course requirements A student working toward a Bachelor of Arts in Music, in addition to completing the University Core Curriculum and College requirements, must complete the following courses in the Music Department: Musicianship I–VI (Music 51, 52, 53, 54, 55, 56); Introduction to Music (Music 70); Orchestration/Arranging/MIDI (Music 151); Form and Analysis (Music 152); Repertory Class (Music 68/168); Music History I–III (Music 170, 171, 172); and Music in the Community (Music 173).

Private instruction and ensemble requirement All music majors must be enrolled in private instruction and an ensemble during every quarter in which they are a declared major; experience in at least two different ensembles is required before graduation.

Additional requirements Music majors must be enrolled in the Keyboard Proficiency Class (Music 37) until the requirements are passed or they must demonstrate keyboard proficiency (as outlined in the Music Department *Student Hand-*

book) through an arranged audition before the keyboard faculty. They must also complete one quarter of pedagogy (Music 199F), as assigned by their individual adviser, before graduating.

Bachelor of Arts with a Minor in Music

A student working toward a minor in music, in addition to completing the University Core Curriculum and College requirements in their major, must complete the following courses in the Music Department: Introduction to Music (Music 70); Musicianship I–III (Music 51, 52, 53); two classes from the Music History sequence (Music 170, 171, or 172); and an elective of their choice (Music 71, 72, 73, 174, 175, 176, or 183).

Private instruction and ensemble requirement All music minors must complete a minimum of six quarters of private instruction and six quarters of ensemble experience.

Music Honors Program

The Department of Music awards honors at graduation to music majors who have satisfactorily completed the Music Honors Program. Designed as a rigorous course of study for students who wish to attain a higher level of achievement, this honors sequence can be taken in performance, composition, theory, or music history, and presupposes academic as well as musical excellence. A minimum GPA of 3.0 overall and 3.5 in all music courses, including applied lessons, is required.

Students interested in the Music Honors Program should consult the chair of the Music Department early in their tenure at Santa Clara University, since application is made during the spring quarter of the candidate's sophomore year. Working in conjunction with a faculty adviser, a music honors candidate develops a proposal for a project to be undertaken with close faculty supervision and to be completed by the end of his/her senior year. Music honors may be pursued in a single area of specialization or in a combination of areas in consultation with the department chair.

Performer's Certificate for Distinguished Musical Performance

Established in 1980 by the Music Department faculty, the Performer's Certificate is awarded to a student demonstrating exceptional accomplishment in musical performance.

American Choral Directors Association National Choral Student Award

This award is given to a student who has been involved in choral music in the following ways: participated continuously in choral ensembles, provided service to the ensemble and conductor, demonstrated a high degree of choral proficiency and music literacy, and contributed to the advancement of choral singing at the University.

76. Writing About Music

Practice in the articulation of thoughts and feelings about music through such projects as research writing, essays, musical reviews, and creative writing. Some concert attendance required.

180. Musical Theatre Production Workshop

Gives students the opportunity to perform in a musical theatre production workshop that covers the study of songs and scenes from a wide variety of musicals. (Also listed as Theatre 180.)

APPLIED MUSIC

Class Instruction

Note: Music 30 (Beginning Piano Class), Music 32 (Beginning Guitar Class), and Music 34 (Beginning Voice Class) fulfill the Fine Arts Core requirement for the College of Arts and Sciences.

30. Beginning Piano Class

Introductory instruction in piano. Class limited to 16 students. Open to nonmajors.

32. Beginning Guitar Class

Examination of essential elements required to play guitar in the classical style, including fundamental principles of technique, sight-reading, pedagogic repertoire, history, and literature. May be repeated for credit. Open to nonmajors.

34. Beginning Voice Class

Application of basic vocal techniques to develop singing facility. Practical experience in performing. May be repeated for credit. Open to nonmajors.

37. Keyboard Proficiency Class

For music majors only. Preparation for the Keyboard Proficiency Examination. (One contact hour per week/1 unit only.)

69. Musical Composition for Nonmajors

Directed toward students interested in creating original music in *any* genre: popular, folk, classical, etc. Individuals must be able to present their work in class by at least one of the following methods: written notation, playing an instrument, or singing. Class is geared to the level and background of the students; no formal musical background is necessary. Open to nonmajors.

Private Instruction

Note: An additional fee is charged for private instruction and studio classes. Fulfills the Fine Arts Core requirement.

Private applied instruction on all instruments and voice is available in the Department of Music. Practice rooms are available to any University student, and some instruments can be rented through the department. Nine private lessons are given each quarter. Nonmajors may sign up for half-hour lessons with permission of the instructor. Where applicable, students may be required to register simultaneously in their instrument or voice studio class; to be arranged by the instructor. May be repeated for credit. Open to nonmajors. (1 unit/quarter)

1/101. Piano

1A/101A. Studio Class

2/102. Organ

3/103. Harpsichord

4/104. Voice

5/105. Violin

6/106. Viola

7/107. Violoncello

8/108 Contrabass

9/109. Flute

10/110. Oboe

11/111. Clarinet

12/112. Bassoon

13/113. Horn

14/114. Trombone

15/115. Tuba/Euphonium

16/116. Trumpet

17/117. Saxophone

18/118. Percussion

19/119. Guitar

20/120. Harp

21/121. Composition

22/122. Choral Conducting

23/123. Instrumental Conducting

24/124. Jazz Piano

199A. Junior Recital

199B. Senior Recital

199C. Honors Thesis in Music Theory

199D. Honors Thesis in Music History

199E. Honors Thesis in Composition

199F. Directed Study in Pedagogy

199G. Recording Engineering

199H. Independent Study

199I. Honors Junior Recital

199J. Honors Senior Recital

ENSEMBLES

Note: All ensemble courses are open to nonmajors and may be repeated for credit.

39/139. Concert Wind Ensemble

Performance of standard repertoire for woodwinds, brass, and percussion. *By audition only.* (1 unit/quarter)

40/140. Jazz Ensemble

Preparation and performance of literature for stage and jazz ensembles. *By audition only.* (1 unit/quarter)

41/141. Concert Choir

Study and performance of chamber choral music from the rich classical tradition, ranging from the Renaissance to the 20th century. *By audition only.* (2 units/quarter)

42/142. SCU Pops Ensemble

Open to all students without audition. Preparation and performance of all styles including pop, folk, jazz, contemporary, and classical. (2 units/quarter)

43/143. Santa Clara Chorale

Community chorale open to members of the University community. Preparation and concert performance of large-scale works of choral literature. *By audition only.* (1 unit/ quarter)

44/144. University Orchestra

Preparation and concert performance of major works of orchestral literature. Private lesson scholarships available to qualified students in several instruments. *By audition only.* (1 unit/quarter)

45/145. Guitar Ensemble

Preparation and performance of ensemble literature for classical guitar. Open to selected students. (1 unit/quarter)

46/146. Mission Ensemble

Student-directed, faculty-advised ensemble. Open to all students. Serves as support for selected Masses and special liturgies at Santa Clara Mission Church. Includes a broad range of literature and styles. (1 unit/quarter)

47/147. Flute Choir

All-flute ensemble; minimum of eight students required. Preparation and concert performance of works for flute ensemble. *By audition only.* (1 unit/quarter)

48/148. Chamber Music

Preparation and performance of instrumental chamber works. Student initiative is encouraged in forming groups to be coached by a faculty member. Call the Music Department office for information. (1 unit/quarter)

49/149. Accompanying

Supervised accompanying of student lessons and recitals. *By permission of instructor only.* (1 unit/quarter)

50/150. Instrumental Ensemble

Participation in an ensemble other than those included in Music 48/148. Student-organized groups are encouraged (percussion, brass, etc.); a faculty coach will be assigned. *By permission of department chair.* (1 unit/quarter)

DEPARTMENT OF PHILOSOPHY

Professors: Peter A. Facione, James W. Felt, S.J., Philip J. Kain, William J. Prior *(Chair)*
Associate Professors: Christopher B. Kulp, Michael J. Meyer, William A. Parent, Elizabeth S. Radcliffe, Carol J. White
Lecturers: Lawrence J. Nelson, Thomas M. Powers, Brad Wilburn
Adjunct Lecturers: Manc Hajdin, Calvin Stewart, Donald Stoll
Austin J. Fagothey, S.J., Professor: John Searle
Santa Clara Jesuit Community Professor: James W. Felt, S.J.

Philosophy inquires directly into the relation of human beings to the world: what we are, how we know, what values are, how we live humanly. Worth pursuing for its own sake, philosophical inquiry also promotes analytical thinking and precise expression and, thus, is excellent undergraduate preparation for a number of professional careers, such as law, government, writing, social work, and computer programming.

REQUIREMENTS FOR MAJOR AND MINOR

Students choosing philosophy as their major, in addition to the general University Core Curriculum requirements and the requirements for the Bachelor of Arts degree in the College of Arts and Sciences, must complete at least 13 philosophy courses including the following:

1. Five lower-division courses: Philosophy 11, 12, and 13 (Western Culture sequence), Philosophy 25 or 27 (Logic), and Philosophy 50 (Knowledge and Reality). Philosophy majors should complete at least 11, 12, 25 or 27, and 50 before enrolling in any upper-division philosophy courses.
2. Eight upper-division classes including four classes distributed as follows:
   a. Two historical courses selected from two of the following four periods: Philosophy 131 (Ancient Philosophy); Philosophy 132 (Medieval Philosophy); Philosophy 133 (Modern Philosophy); and Contemporary Philosophy, which includes Philosophy 135 (Existentialism), Philosophy 136 (Analytic Philosophy), Philosophy 137 (Contemporary European Philosophy), and Philosophy 138 (Heidegger).
   b. One course in ethical theory selected from courses numbered 120–129.
   c. One course in either metaphysics or epistemology selected from courses numbered 140–149.

The minor in philosophy requires completion of Philosophy 11 and 12; 25 or 27; and any four upper-division courses. Philosophy 13 may be substituted for one upper-division course.

PRE-LAW EMPHASIS

Philosophy is one of the best majors for pre-law. The mean for philosophy majors taking the LSAT is about 8 percent higher than the mean of other departments. The Pre-Law Emphasis in Philosophy is intended to provide the skills of analytic reasoning and conceptual investigation necessary for law. Philosophical research hones the techniques of careful argumentation and logically disciplined reasoning essential to the legal analysis of cases and statutes. Also, emphasis on ethics courses will help prepare students for the study and analysis of normative issues.

The Pre-Law Emphasis may be taken as part of a philosophy major or as part of a minor, or the courses may be taken alone.

Requirements for Pre-Law Emphasis

1. One course chosen from Philosophy 25 (Informal Logic), 27 (Formal Logic), or 152 (Symbolic Logic)
2. One course chosen from Philosophy 113 (Ethics and the Law) or 154 (Philosophy of Law)
3. One course chosen from Philosophy 2, 5, 6, 7, 8, 9, 10, 110, 112, 121, 122, 123; 142 (Theory of Knowledge); or 136 (Analytic Philosophy)
4. Two courses chosen from 1, 2, or 3 above

HONORS IN THE MAJOR

To qualify for honors in philosophy, the major ordinarily must have a 3.5 grade point average in philosophy courses and complete Philosophy 198 (Senior Research Thesis).

INTRODUCTORY-LEVEL COURSES

General Introduction

1. Introduction to Philosophy

Introduction to philosophy. Consideration of the problems raised in at least three major areas: ethics, metaphysics, and epistemology.

2. Introduction to Ethics

Consideration of the traditional theoretical questions posed in moral philosophy: standards that determine the morality of an action, the motives and consequences of an act, the good life. Authors studied may include Plato, Aristotle, Aquinas, Bentham, Mill, Kant.

5. Ethical Issues in Society

Formal inquiry into normative ethics. Special attention to general ethical principles and to the practical application of these principles to current ethical issues in society. Topics may include the concepts of freedom, obligation, value, rights, justice, virtue, and moral responsibility, as applied to issues like abortion, punishment, economic distribution, racial and sexual discrimination, sexuality, political obligation, nuclear war, and pornography.

6. Ethical Issues in Business

Formal inquiry into normative ethics. Special attention to general ethical principles and the application of these principles to current moral issues in business. Topics may include truth in advertising, corporate social responsibility, affirmative action, capitalism, government regulation, quality of work-life, environmental and resource issues, and ethical codes of conduct.

7. Ethical Issues in Medicine

Formal inquiry into normative ethics. Special attention to general ethical principles and the application of these principles to current moral issues in medicine and the health sciences. Topics may include the definition of death, informed consent, distribution of health care, euthanasia, genetic manipulation, artificial conception, prolongation of life, and organ transplants.

8. Ethical Issues in Politics

Formal inquiry into normative ethics. Emphasis on moral issues in politics and/or public policy. Topics include the concepts of rights, justice, dignity, equality, personhood, desert, retributivism, and utility. Issues discussed may include alienation, individualism, community, discrimination and preferential treatment, capital punishment, abortion, pornography and censorship, sexual equality, world hunger, and animal rights.

9. Ethical Issues and the Environment

Formal inquiry into normative ethics. Emphasis on moral issues and the environment. Topics include animal rights, anthropocentrism, cost-benefit analysis, human rights, interspecies justice, land (use and value), population control, rights (of future generations and natural objects), values (moral and aesthetic) and preferences, wildlife protection, wilderness.

10. Ethical Issues in the Law

Formal inquiry into normative ethics. Emphasis on moral issues and concepts in contemporary legal debates on issues such as hate speech and freedom of speech, the right to die, homosexual parenting, abortion picketing, the exclusionary rule, the insanity defense, and the legalization of drugs. Discussion of moral dilemmas confronting criminal lawyers, including the practice of knowingly allowing false testimony from their clients.

Western Culture Sequence

11. Western Culture: Philosophy I, Classical & Medieval

Beginnings of Western philosophy. Representative writers of the Greek and medieval traditions, with attention to their historical and literary milieu and their relevance to contemporary thought.

12. Western Culture: Philosophy II, Early Modern

Principal fashioners of the modern mind. 17th- and 18th-century philosophers studied in the historical and literary context of their times with attention to their impact on the present.

13. Western Culture: Philosophy III, Modern & Contemporary

Introduction to the closer roots of modern thinking, from the critical revolution of Kant to some of the dominant currents of the 20th century. *Prerequisite: Philosophy 12 strongly recommended.*

Logic Courses

25. Informal Logic

Introduction to the art of logical reasoning. Emphasis on the ability to recognize common fallacies of argumentation.

27. Introduction to Formal Logic

Introduction to the study of deductive inference, including traditional and modern techniques.

Metaphysics and Epistemology

50. Knowledge and Reality

Introduces two central areas of philosophy—epistemology and metaphysics—through the study of several fundamental problems in those areas. Problems that may be studied include the existence of God, the relation between mind and body, freedom of the will, the nature and possibility of knowledge, and the relation between language and reality. Required of all philosophy majors and normally taken during the sophomore year.

INTRODUCTORY-LEVEL COURSES

General Introduction

1. Introduction to Philosophy

Introduction to philosophy. Consideration of the problems raised in at least three major areas: ethics, metaphysics, and epistemology.

2. Introduction to Ethics

Consideration of the traditional theoretical questions posed in moral philosophy: standards that determine the morality of an action, the motives and consequences of an act, the good life. Authors studied may include Plato, Aristotle, Aquinas, Bentham, Mill, Kant.

5. Ethical Issues in Society

Formal inquiry into normative ethics. Special attention to general ethical principles and to the practical application of these principles to current ethical issues in society. Topics may include the concepts of freedom, obligation, value, rights, justice, virtue, and moral responsibility, as applied to issues like abortion, punishment, economic distribution, racial and sexual discrimination, sexuality, political obligation, nuclear war, and pornography.

6. Ethical Issues in Business

Formal inquiry into normative ethics. Special attention to general ethical principles and the application of these principles to current moral issues in business. Topics may include truth in advertising, corporate social responsibility, affirmative action, capitalism, government regulation, quality of work-life, environmental and resource issues, and ethical codes of conduct.

7. Ethical Issues in Medicine

Formal inquiry into normative ethics. Special attention to general ethical principles and the application of these principles to current moral issues in medicine and the health sciences. Topics may include the definition of death, informed consent, distribution of health care, euthanasia, genetic manipulation, artificial conception, prolongation of life, and organ transplants.

8. Ethical Issues in Politics

Formal inquiry into normative ethics. Emphasis on moral issues in politics and/or public policy. Topics include the concepts of rights, justice, dignity, equality, personhood, desert, retributivism, and utility. Issues discussed may include alienation, individualism, community, discrimination and preferential treatment, capital punishment, abortion, pornography and censorship, sexual equality, world hunger, and animal rights.

9. Ethical Issues and the Environment

Formal inquiry into normative ethics. Emphasis on moral issues and the environment. Topics include animal rights, anthropocentrism, cost-benefit analysis, human rights, interspecies justice, land (use and value), population control, rights (of future generations and natural objects), values (moral and aesthetic) and preferences, wildlife protection, wilderness.

10. Ethical Issues in the Law

Formal inquiry into normative ethics. Emphasis on moral issues and concepts in contemporary legal debates on issues such as hate speech and freedom of speech, the right to die, homosexual parenting, abortion picketing, the exclusionary rule, the insanity defense, and the legalization of drugs. Discussion of moral dilemmas confronting criminal lawyers, including the practice of knowingly allowing false testimony from their clients.

Western Culture Sequence

11. Western Culture: Philosophy I, Classical & Medieval

Beginnings of Western philosophy. Representative writers of the Greek and medieval traditions, with attention to their historical and literary milieu and their relevance to contemporary thought.

12. Western Culture: Philosophy II, Early Modern

Principal fashioners of the modern mind. 17th- and 18th-century philosophers studied in the historical and literary context of their times with attention to their impact on the present.

13. Western Culture: Philosophy III, Modern & Contemporary

Introduction to the closer roots of modern thinking, from the critical revolution of Kant to some of the dominant currents of the 20th century. *Prerequisite: Philosophy 12 strongly recommended.*

Logic Courses

25. Informal Logic

Introduction to the art of logical reasoning. Emphasis on the ability to recognize common fallacies of argumentation.

27. Introduction to Formal Logic

Introduction to the study of deductive inference, including traditional and modern techniques.

Metaphysics and Epistemology

50. Knowledge and Reality

Introduces two central areas of philosophy—epistemology and metaphysics—through the study of several fundamental problems in those areas. Problems that may be studied include the existence of God, the relation between mind and body, freedom of the will, the nature and possibility of knowledge, and the relation between language and reality. Required of all philosophy majors and normally taken during the sophomore year.

INTERMEDIATE-LEVEL COURSES

Normal prerequisite for nonethics courses: at least one introductory-level course

109. Ethics and the Environment

Formal inquiry into normative ethics. Investigation of environmental issues from the point of view of classical ethical perspectives and consideration of how questions about the moral value of the environment provide new challenges to such classical theories. Topics may include animal rights, human rights, the rights of future generations, the rights of nature, anthropocentrism, interspecific justice, land (use and value), wilderness, and values and preferences.

110. Ethics in the Health Professions

Formal inquiry into applied ethics. Emphasis on moral issues encountered by members of the health professions. Topics may include the formulation of professional ethical standards and the examination of moral dilemmas in medicine, psychological counseling, and other areas of health care. (Also listed as Religious Studies 157.)

112. Ethics in Management

Formal inquiry into applied ethics. Emphasis on moral issues encountered by managers. Topics may include the role of ethical principles in business and ethical dilemmas raised by the management and administration of business organizations, such as conflicts of interest, organizational politics, commercial bribery, whistle-blowing, labor-management conflicts, and consumerism.

113. Ethics and Constitutional Law

Formal inquiry into applied ethics. Emphasis on important issues in the formation and the practice of law. Topics may include the relationship between legal and moral obligation, moral principles underlying the law, and the nature of legal reasoning.

117. Science, Technology, and Ethics

Investigation of the religious and ethical significance of the impact of technology on society.

118. Ethics and Warfare

Historical and contemporary approaches to the ethical issues that arise in warfare. (Also listed as Religious Studies 159.)

119. Special Topics in Applied Ethics

Selected philosophical problems in applied ethics studied at an advanced level.

120. Ethical Theory

Examination of major philosophers or issues in moral and social philosophy. Topics may include dignity, moral rights and obligations, justice, moral relativism, virtue, the good, and happiness.

121. Classic Issues in Ethics

Exploration of the fundamental questions of ethics through close study of some of the great works of moral philosophy, such as Plato's *Republic*, Aristotle's *Nicomachean Ethics*, Kant's *Groundwork*, and Mill's *Utilitarianism. Prerequisite: upper-division standing.*

122. Political Philosophy and Ethics

Moral issues in political philosophy, especially traditional ethical justifications for political authority. Topics may include theories of political authorization and contract theory, rights, liberty, equality, justice, community, revolution, civil disobedience, and others. Specific variations include 115A (Classical and Modern), 115B (Contemporary). *Prerequisite: upper-division standing.*

123. Marx and Ethics

Examination of Marx's ethical thought in the context of traditional ethical theory

(Aristotle, Kant) and in relationship to his political views and philosophy of history. Topics may include alienation, the human essence, the individual, community, needs, freedom, equality, rights, and justice.

124. Virtue Ethics

Exploration of various basic issues in ethics, such as friendship, courage, or compassion, from the point of view of virtues or (moral) character. Close study of classic authors, for example, Aristotle, as well as contemporary writers on virtue ethics. *Prerequisite: upper-division standing.*

129. Special Topics in Ethical Theory

Selected philosophical problems in ethical theory studied at an advanced level.

131. Ancient Philosophy

Study of one major philosopher or philosophical issue (such as substance, causation, or virtue) from the ancient period. Specific variations include 131A (Socrates), 131B (Plato), and 131C (Aristotle). *Prerequisite: Philosophy 11.*

132. Medieval Philosophy

Study of one major philosopher or philosophical issue (such as universals, existence and the nature of God, or free will) from the medieval period. Specific variations include 132A (Augustine) and 132B (Aquinas). *Prerequisite: Philosophy 11.*

133. Modern Philosophy

Study of one major philosopher or issue (such as mind and body, skepticism and knowledge, or causation) from the modern period. Specific variations include 133A (Hume), 133B (Kant), and 133C (Hegel). *Prerequisite: Philosophy 12.*

134. Skepticism

Study of the problem of skepticism from its origin in ancient Greece to the present day. Considers both skeptical positions and views critical of skepticism. Readings may include Sextus Empiricus, Descartes, Hume, and Wittgenstein. *Prerequisite: Philosophy 11 or 12.*

135. Existentialism

General introduction to existentialism in its analysis of the basic structures of human existence, particularly freedom, and in its major thinkers. *Prerequisite: Philosophy 12 or permission of instructor.*

136. Analytic Philosophy

Examination of the major current in 20th-century Anglo-American philosophy. Philosophers studied may include Frege, Russell, Carnap, Moore, Wittgenstein, and Austin; movements may include logical positivism and ordinary-language philosophy. *Prerequisites: Philosophy 12 and 25 or 27.*

137. Contemporary European Philosophy

Selected topics from 20th-century European philosophy: movements such as phenomenology and structuralism; philosophers such as Husserl, Heidegger, Merleau-Ponty, Sartre.

138. Heidegger

Intensive study of the work of a major thinker of the 20th century. *Prerequisites: Philosophy 13 and either 11 or 12.*

139. Special Topics in the History of Philosophy

Selected philosophical problems in history of philosophy studied at an advanced level.

140. Philosophy and Science

Exploration of selected philosophic questions that arise in contemporary science, especially physics. Topics include the nature of scientific knowing, the replacement of theories, paradoxes of relativity and quantum theory, and the sense in which scientific objects are "real." *Prerequisite: Philosophy 12.*

141. Metaphysics

Examination of major issues in metaphysics. Topics may include the nature and possibility of metaphysics, free will and determinism, the mind/body problem, personal identity, and metaphysical issues arising in science. *Prerequisites: Philosophy 11, 12, and 25 or 27.*

142. Theory of Knowledge

Examination of major issues in the theory of knowledge. Topics may include justification of belief, a priori knowledge, perception, and theories of truth. *Prerequisites: Philosophy 12 and 25 or 27.*

143. Analytic Metaphysics

Philosophical investigation of the free-will problem. Discussion of concepts of freedom, fate, causation, and God.

149. Special Topics in Metaphysics and Epistemology

Selected philosophical problems in metaphysics and/or epistemology studied at an advanced level.

150. Philosophy of Religion

Philosophical inquiry, based on both classical and contemporary views, as to whether the existence of God can be rationally demonstrated, whether it is compatible with evil, how human beings relate to God, the nature of faith, and the nature of religious language.

152. Symbolic Logic

Study of various topics in modern symbolic logic. *Prerequisite: Philosophy 27 or permission of instructor.*

154. Philosophy of Law

Proper limits and uses of the criminal law in regulating human behavior. No philosophy prerequisite.

155. Aesthetics

Philosophical examination of the historical development of the concepts of taste and beauty.

ADVANCED-LEVEL COURSES

Normal prerequisites: two intermediate-level courses

198. Senior Research Thesis

Creation of a carefully researched and scholarly paper, under the active direction of a selected member of the department's staff. Of particular value to senior students who intend to pursue graduate studies.

199. Directed Research

Tutorial work, with demanding requirements, for advanced students in particular problem areas not otherwise accessible through courses. *Prerequisite: previous arrangement with the instructor and department chair.*

DEPARTMENT OF PHYSICS

Professor Emeritus: William A. Barker II
Professors: John B. Drahmann, William T. Duffy Jr., Carl H. Hayn, S.J., Philip T. McCormick
Associate Professor: Philip R. Kesten *(Chair)*
Assistant Professors: Richard P. Barber, David P. Jackson, Betty A. Young
Adjunct Lecturer: William O. De Hart
Clare Booth Luce Professor: Betty A. Young

The Department of Physics offers major programs of lecture and laboratory instruction leading to the Bachelor of Science in Physics and the Bachelor of Science in Engineering Physics. The department also provides an academic minor in physics and required and elective courses for students majoring in other fields.

The usual career goals of a physics major include professional scientific employment by industry, government, or a university, or secondary school teaching in physical science. The undergraduate major program in physics is appropriate preparation for graduate study in physics, astronomy and astrophysics, biophysics, environmental science, geological science and geophysics, medical physics and medicine, patent law, physical science teaching, and oceanography.

The engineering physics major, particularly appropriate for the applied science student who wishes to do research and development, covers a broad spectrum of courses in mathematics, engineering, and physics. In view of today's rapidly changing technology, the assignments of young engineers or physicists employed by industry will likely involve new technologies. This program emphasizes, to a greater extent than the traditional engineering major, the *physics* fundamentals that are applicable to the new technologies, as well as to the more established ones.

REQUIREMENTS FOR MAJOR AND MINOR

Bachelor of Science in Physics

The physics major must fulfill the University Core Curriculum and College requirements and the following departmental requirements:

1. Chemistry 5 and 6
2. Mathematics 10, 11, 12, 13, 21, and 22
3. Physics 4, 5, 6, and 7 (introductory physics sequence) and associated labs
4. A series of intermediate-level courses in the subject areas of electronics, classical mechanics, electromagnetism, thermal physics, optics, mathematical physics, and quantum physics. The major program consists of Physics 70, 101, 102, 111, 112, 113, 120, 121, 122, 131, 132, and one upper-division elective from the Physics Department.
5. For graduate study in physics or related fields, additional elective physics and mathematics courses and research participation are recommended.

Physics 122 is taught as a Capstone Course.

Consult *Information for Physics and Engineering Physics Majors* regarding a special curriculum for students who are preparing for careers in biophysics, medical physics, or medicine.

For students with broad interests crossing into other disciplines, such as biology, chemistry, computer science, electrical engineering, mathematics, or philosophy, specialized curricula should be developed in consultation with the student's departmental faculty adviser.

Bachelor of Science in Engineering Physics

The engineering physics major must fulfill the University Core and College requirements, with the modification that this major requires a minimum of 197 quarter units in an approved curriculum. Professor Duffy is coordinator of the Engineering Physics Program. Curricula are approved by the Engineering Physics Committee consisting of Professor Duffy (Physics), Professor Saad (Mechanical Engineering), and Professor Yarbrough (Electrical Engineering). The departmental program requirements are listed below.

1. Chemistry 5 and 6; Mathematics 11, 12, 13, and 21; Applied Mathematics 106 (Differential Equations)
2. Physics 4, 5, 6, and 7 (introductory physics sequence and associated labs), 70, 101, 102, 111, 112, 131, 132, and 170
3. COEN 6; ELEN 100 and 110; MECH 10, 121, and 122; CENG 43
4. Elective courses in engineering and/or science directed toward a special emphasis area (5–6 term courses)
   Example: Solid-State Science Emphasis
   ELEN 151 (Semiconductor Devices I)
   ELEN 152 (Semiconductor Devices II)
   Physics 116 (Physics of Solids)
   Physics 120 (Thermal Physics)
   Physics 121 (Quantum Physics I)
   Special emphasis areas include electronics, optics, energy sources and thermodynamics, materials science, solid-state science, nuclear science, and computational physics.
5. Free electives (3–4 courses)

Physics 116 is taught as a Capstone Course; although not required, it is highly recommended.

Minor in Physics

The minor in physics requires completion of Physics 4, 5, 6, and 7; and any four additional physics courses except 1, 3, 51, 20, 21, 22, 198, and 199.

PREPARATION IN PHYSICS FOR ADMISSION TO TEACHING CREDENTIAL PROGRAMS

Coordinator: See chair.

The state of California requires that students seeking a credential to teach physics in California secondary schools either pass a subject-area examination in combined sciences with an emphasis in physics or complete the state-approved Subject-Matter Preparation Program in combined sciences with an emphasis in physics. The credential itself requires a fifth year of study and student teaching.

The Physics Department is working on a course of study that satisfies the requirements for the state of California Subject-Matter Preparation Program in combined sciences with an emphasis in physics. The program is similar to the physics major with some modifications. General requirements include the four-course sequence of lower-division, calculus-based physics, as well as courses in earth science, astronomy, electronics, mechanics, and electromagnetism. Education 98/198B is a recommended elective.

Students interested in the Subject-Matter Preparation Program should consult with the chair of the Physics Department at an early date.

The Subject-Matter Program in combined sciences with an emphasis in physics is presently being revised. For further information about this change, please contact the chair of the Department of Physics.

CLAD Emphasis

Nearly one-third of the total school population of California is composed of students with limited proficiency in English, and more than half are culturally and ethnically diverse. In order to meet the challenge of teaching such a diverse student population, the California Commission on Teacher Credentialing is requiring special training and support for anyone interested in teaching in California public schools. The Division of Counseling Psychology and Education now offers such preparation through the Cross-Cultural, Language, and Academic Development (CLAD) emphasis, in conjunction with the fifth-year credential program. This emphasis requires 9 quarter units of college-level language acquisition, as well as course work at both the graduate and undergraduate level. For courses that meet the undergraduate prerequisite requirements, contact the pre-teaching programs coordinator, Nedra Shunk, Liberal Studies Program.

STUDENT RESEARCH OPPORTUNITIES

Research in the department is currently funded by the National Science Foundation and the Research Corporation. Majors in physics, engineering, and engineering physics participate in faculty research projects through Physics 198 (Undergraduate Physics Research) and Physics 199 (Directed Readings in Physics). In addition, advanced students have opportunities for part-time employment assisting faculty in laboratory and related teaching activities.

LOWER-DIVISION COURSES

Note: For courses that charge fees, see the Undergraduate Schedule of Classes.

1. Hands-On Physics: An Introduction to Scientific Thinking

Emphasizes hands-on experience with scientific methods of thought and investigation. Students build models to gain an understanding of fundamental physics principles and to answer real-world questions like "Why do clouds form?" and "Why are some sounds more pleasant than others?" Includes term research projects, in which students design experiments, collect and analyze data, and present results. (4 units)

3. Introduction to Astronomy

A brief history of the science of astronomy is followed by a thorough study of the modern theory of stellar evolution. Examination of the origin and structure of current models of the universe. Fall, winter, and spring quarters. (4 units)

4. Physics for Scientists and Engineers I

Measurement. Vectors. Straight-line kinematics. Kinematics in two dimensions. Laws of inertia, mass conservation, and momentum conservation. Center-of-mass and reference frames. Force. Newtonian mechanics and its applications. Work and kinetic energy. Potential energy and energy conservation. Rotational dynamics. Spring quarter. *Prerequisites: Math 11 and 12. (Math 12 may be taken concurrently.)* (4 units) NCX†

4L. Physics for Scientists and Engineers I Laboratory

Measurement theory. Statistical reduction of data. Computer graphing techniques. Experiments directly related to Newton's laws and to conservation laws. Lab quizzes. Spring quarter. *Prerequisite: Physics 4 (usually taken concurrently).* (1 unit) NCX†

5. Physics for Scientists and Engineers II

Simple harmonic motion. Gravitation. Kepler's laws. Fluids. Electrostatics. Gauss's law. Potential. Capacitance. Electric current. Resistance. Kirchhoff's rules. DC circuits. AC circuits. Magnetic force. Fall quarter. *Prerequisites: Math 13 and Physics 4 with a grade of C– or better. (Math 13 may be taken concurrently.)* (4 units) NCX†

5L. Physics for Scientists and Engineers II Laboratory

Continuation of Physics 4L. Experiments in periodic motion. Use of the oscilloscope. Experiments with simple circuits involving capacitors and resistors. Lab quizzes. Fall quarter. *Prerequisite: Physics 5 (usually taken concurrently).* (1 unit) NCX†

6. Physics for Scientists and Engineers III

Electromagnetic induction. AC circuits. Waves. Geometrical optics. Interference, diffraction, and polarization. Thermal properties and kinetic theory of gases. Thermodynamics. Winter quarter. *Prerequisite: Physics 5 with a grade of C– or better.* (4 units) NCX†

6L. Physics for Scientists and Engineers III Laboratory

Continuation of Physics 5L. Experiments in magnetism and circuits involving inductors. Geometrical optics and computer ray tracing. Lasers. Mechanical equivalent of heat. Lab quizzes. Winter quarter. *Prerequisite: Physics 6 (usually taken concurrently).* (1 unit) NCX†

7. Physics for Scientists and Engineers IV

Special relativity. Historical development of modern physics: black body radiation, photoelectric effect, Compton scattering,

† Exempted from challenge

X-rays, Bohr atom, DeBroglie wavelength, Heisenberg uncertainty principle. Quantum waves and particles. Schroedinger equation. Nuclear structure and decay. Statistical physics. Solids. Semiconductors. Laboratory. Spring quarter. *Prerequisite: Physics 6 with a grade of C– or better.* (5 units) NCX†

20. General Physics I

Vectors. Newtonian laws of motion. Gravitational forces and acceleration. Momentum. Laws of equilibrium. Torques, moment of inertia, and rotational motion. Work and energy. Thermal energy, heat transfer, entropy, and thermodynamics. Noncalculus-based. Fall quarter. *Prerequisites: basic algebra and trigonometry.* (4 units) NCX†

21. General Physics II

Fluid statics and dynamics. Elastic deformations. Vibrations and wave motion. Superposition principle. Sound. Optics. Coulomb's law. Electric fields and potential. Ohm's law. Laboratory. Winter quarter. *Prerequisite: Physics 20 with a grade of C– or better.* (5 units) NCX†

22. General Physics III

Resistance. Resistivity. Electric power. D-C circuits. Capacitors. Faraday's law of induction. A-C circuits. Wave-particle duality. Bohr model of the atom. Nucleus and radioactivity. Quantum mechanics. Relativity. Laboratory. Spring quarter. *Prerequisite: Physics 21 with a grade of C– or better.* (5 units) NCX†

41. Introduction to Space Sciences

Overview of the science involved with space exploration using spacecraft. Knowledge in the fields of astronomy, life sciences, and environmental science before and after the advent of space exploration is contrasted. Fall, winter, and spring quarters. (4 units)

51. Introduction to Earth Science

Overview of geology and its significance to man. Earthquakes, volcanism, plate tectonics and continental drift, rocks and minerals, geologic hazards, mineral resources. Emphasis on basic geologic principles and the role of geology in today's world. Winter quarter. (4 units)

70. Electronic Circuits for Scientists I

Linear electric circuits. D-C analysis, network theorems, phasor a-c analysis, transients. Diode circuits. Physics of p-n junction. Junction diodes, field-effect devices, bipolar junction transistors. Laboratory. Spring quarter. *Prerequisite: Physics 6.* (5 units)

97. Practicum in Observational Astronomy

A 1-unit course for participants in the observational astronomy program carried out in the Ricard Memorial Observatory. Students meet regularly with the faculty adviser to design and implement ongoing projects. Students learn and improve their skills in using the telescopes and other scientific apparatus, and expand their knowledge of astronomy. Graded P/NP only. May be repeated for credit. Offered fall, winter, and spring.

† Exempted from challenge

UPPER-DIVISION COURSES

Note: For courses that charge fees, see the Undergraduate Schedule of Classes.

101. Analytical Mechanics I

Review of vectors, vector calculus, and coordinate transformations. Particle kinematics and Newtonian dynamics. Oscillations. Central forces. Systems of particles. Fall quarter. *Prerequisite: Physics 4.* (5 units)

102. Analytical Mechanics II

Rigid body mechanics. Calculus of variations. Methods of Lagrange and Hamilton. Stability and coupled oscillators. Elastic bodies. Winter quarter. *Prerequisite: Physics 101 or Civil Engineering 42.* (5 units)

111. Electromagnetic Theory I

Vector analysis. Electrostatic fields. Laplace's and Poisson's equations. Multipole expansion. Dielectrics. Magnetostatics. Winter quarter. *Prerequisite: Physics 6.* (5 units)

112. Electromagnetic Theory II

Magnetic materials. Induced electromotive forces. Maxwell's equations. Energy in electrodynamics. Electromagnetic waves. Reflection and refraction. Guided waves. Spring quarter. *Prerequisite: Physics 111.* (5 units)

113. Optics

Geometrical optics. Interference. Fraunhofer and Fresnel diffraction. Optical instruments. Polarization. Crystal optics. Selected topics from contemporary optics. Laboratory. Winter quarter. Offered alternate years. *Prerequisite: Physics 6.* (5 units)

116. Physics of Solids

Crystal structure. Phonons. Free electron theory of metals. Band theory of solids. Magnetism. Superconductivity. Spring quarter. *Prerequisites: Physics 7 and senior standing.* (5 units)

120. Thermal Physics

Laws of thermodynamics with applications to ideal and nonideal systems. Elementary kinetic theory of gases. Entropy. Classical and quantum statistical mechanics. Selected topics from magnetism and low-temperature physics. Winter quarter. Offered alternate years. *Prerequisite: Physics 7.* (5 units)

121. Quantum Physics I

Thermal radiation. Wave-particle duality. Bohr atom. Schroedinger wave mechanics. One-electron atoms. Atomic moments, spin, and transitions. Multielectron atoms. Hartree theory. Optical excitations. Zeeman effect. Laboratory. Fall quarter. *Prerequisites: Physics 7 and 102.* (5 units)

122. Quantum Physics II

Molecules, bonding, and spectra. Nuclear models and structure. Nuclear decay and reactions. Elementary particles and quark theory. Strong and weak nuclear forces. Laboratory. Winter quarter. *Prerequisite: Physics 121.* (5 units)

131. Methods of Mathematical Physics I

Linear equations. Matrices. Sets of linear equations. Row reduction. Determinants; Cramer's rule. Lines and planes. Matrix operations. Linear combinations. Linear functions. Linear operators. General theory of sets of linear equations. Special matrices. Fourier series. Simple harmonic motion and wave motion. Periodic functions. Applications of Fourier series. Fourier coefficients. Complex form of Fourier series. Other intervals. An application to sound. Parseval's theorem. Spring quarter. *Prerequisite: Math 22 or Applied Math 106.* (5 units) NCX†

† Exempted from challenge

132. Methods of Mathematical Physics II

Coordinate transformations. Tensor analysis. Linear transformations. Orthogonal transformations. Eigenvalues and eigenvectors. Diagonalizing matrices. Applications of diagonalization. Curvilinear coordinates. Scale factors and basis vectors for orthogonal systems. General curvilinear coordinates. Vector operators in orthogonal curvilinear coordinates. Tensor analysis—introduction. Cartesian tensors. Functions of a complex variable. Analytic functions. Contour integrals. Laurent series. The residue theorem. Methods of finding residues. Evaluation of definite integrals by use of the residue theorem. The point at infinity. Residues at infinity. Integral transforms. Laplace transform. Solution of differential equations by Laplace transforms. Fourier transforms. Convolution. Parseval's theorem. Inverse Laplace transform (Bromwich integral). Dirac delta function. Green functions. Fall quarter. *Prerequisite: Physics 131.* (5 units) NCX†

170. Electronic Circuits for Scientists II

Review of semiconductor devices. Elementary amplifiers. Logic gates, digital integrated circuits, Boolean algebra, registers, counters, memories. Operational amplifier circuits. Small-signal device models. Linear amplifier bias circuits and small-signal equivalent circuits. Frequency response. Laboratory. Fall quarter. *Prerequisite: Physics 70.* (5 units)

197. Practicum in Observational Astronomy

A 1-unit course for participants in the observational astronomy program carried out in the Ricard Memorial Observatory. Students meet regularly with the faculty adviser to design and implement ongoing projects. Students learn and improve their skills in using the telescopes and other scientific apparatus, and expand their knowledge of astronomy. Graded P/NP only. May be repeated for credit. Offered fall, winter, and spring quarters.

198. Undergraduate Physics Research

Departmental work under close professorial direction on research in progress. Permission of the professor directing the research must be secured before registering for this course. Restricted to physics majors, engineering physics majors, and honors students with a 3.0 or higher grade point average. Fall, winter, and spring quarters.

199. Directed Reading in Physics

Detailed investigation of some area or topic in physics not covered in the regular courses; supervised by a faculty member. Permission of the professor directing the study must be secured before registering for this course. Restricted to students with a 3.0 or higher grade point average. Fall, winter, and spring quarters.

† Exempted from challenge

DEPARTMENT OF POLITICAL SCIENCE

Professors: Dennis R. Gordon, Eric O. Hanson, Timothy J. Lukes
Associate Professors: Jane Curry-Palmer, Janet A. Flammang, Peter I. Minowitz *(Chair)*, Terri Peretti, William J. Stover
Assistant Professors: Gregory P. Corning, Jesús Martínez-Saldaña, Ross A. Miller
Patrick A. Donohoe, S.J., Professor: Eric O. Hanson

The Department of Political Science introduces students to the analysis of political behavior, values, institutions, and governments. It also offers preparation for various graduate and professional studies and for careers in public service. Special emphasis programs are available to political science majors in pre-law and public administration.

REQUIREMENTS FOR MAJOR AND MINOR

In addition to the general University Core Curriculum and College requirements, a student majoring in political science must satisfactorily complete the following:

1. Two mathematics courses, selected from one of the following:
   a. Mathematics 6 (Finite Mathematics for Social Science) and 7 (Calculus for Social Science)
   b. Mathematics 11 and 12 (Calculus and Analytic Geometry I and II)
   c. Mathematics 6 (Finite Mathematics) and 8 (Introduction to Statistics)
   d. Mathematics 11 (Calculus and Analytic Geometry I) and 8 (Introduction to Statistics); other statistics courses may replace Mathematics 8.
2. Eleven term courses in political science:
   a. Political Science 1, 2, 25, 30 (taken during the freshman and sophomore years, preferably in sequence)
   b. Seven upper-division courses in political science. Of these seven courses, one must be a lecture course from each of these five areas of political science: U.S. Politics, Comparative Politics, International Relations, Political Philosophy, and Applied Quantitative Methods. (preferably during junior year)
3. A political science seminar taken during the senior year from among the seven upper-division courses
4. An average grade of C or higher in political science courses

The minor in political science requires completion of any three lower-division political science courses, three upper-division courses, and a seventh upper- or lower-division course. Students should note the lower-division prerequisites for the upper-division courses.

SPECIAL EMPHASIS PROGRAMS

Political science majors may select one of two emphasis programs. These are not narrow specializations but aim at a particular competence within the major program. The completion of a special emphasis program may be noted on a student's transcript if the student notifies the department chair and the chair approves the notation. Detailed programs of study listing recommended courses for each emphasis may be obtained from the department chair.

Pre-Law

The program is available to those political science majors considering graduate study in law and legal careers.

Public Administration

The program combines political science with courses dealing with the enactment of public policy. It is available to those majors planning careers in public service or business.

POLITICAL SCIENCE HONORS PROGRAM

The Political Science Honors Program enhances the regular major by providing a more specialized course of study to prepare highly qualified students for graduate study in the social sciences. All majors with a GPA of 3.0 or higher in the lower-division sequence are eligible to apply. A maximum of 15 students per year are admitted. Admission is determined on the basis of course work, recommendations, and a personal interview with the faculty director.

Participants in the department Honors Program must meet the following requirements:

1. Foreign language: Complete the foreign language appropriate to the student's academic and vocational interests through the intermediate level.
2. Internship: Complete one of the internships available to political science majors (see External Programs, below).
3. Independent research project: Complete Political Science 180 (Honors Research Projects) during senior year.
4. Economics: Complete a course in macro- or microeconomics.
5. Honors activity report: During the spring quarter of their senior year, department Honors students must submit an activity report describing their contributions to political science at Santa Clara.
6. Department contribution: Honors students are expected to participate in various department-sponsored events, and one representative from the program has full voting status in the department's faculty deliberations.

Interested students should consult their advisers and/or the department chair.

PREPARATION IN POLITICAL SCIENCE FOR ADMISSION TO TEACHING CREDENTIAL PROGRAMS

The state of California requires that students seeking a credential to teach government in California secondary schools either pass a subject-area examination in social science or complete a state-approved Subject-Matter Preparation Program in social science. Such a program is currently being developed. The credential itself requires a fifth year of study and student teaching. Education 98/198B is a recommended elective.

EXTERNAL PROGRAMS

The Political Science Department makes available to qualifying students opportunities to participate in a variety of programs that combine practical field experience and academic credit.

These programs involve many levels of political activity:

1. On the international level, the department sponsors a U.N. Program with participation open to all undergraduate students. Additionally, students may study at the United Nations itself through a program with Drew University in New York.
2. On the national level, Santa Clara is a member school of American University's Washington, D.C., program, in which students receive credit for internships and intensive seminars at the nation's capital.
3. On the local level, the department assists students in arranging academic credit for internships in local politics. Students may work for government agencies, legislative or judicial bodies, political parties, or politically related groups. From time to time, the department offers courses that combine local internships with classroom work.

LOWER-DIVISION COURSES

1. Introduction to U.S. Politics

Critical analysis of U.S. political values, institutions, and processes. America's political tradition, the Constitution, the presidency, Congress, the bureaucracy, Supreme Court, elections, political parties, interest groups, mass media, domestic policies, and foreign policy.

2. Introduction to Comparative Politics

Government and politics in several modern states. Emphasis on the development of analytical abilities and critical skills in the evaluation of political culture, processes, and institutions.

25. Introduction to International Relations

Conceptual models used to analyze international relations, contemporary problems of world politics, and the methods states use to provide peace and security.

30. Introduction to Political Philosophy

An exploration of some of the principal themes and questions of political philosophy through the writings of authors such as Plato, Machiavelli, Marx, and Mill. Prominent themes include theory and practice, individual liberty, morality and politics, freedom, obligation, and justice.

40. Chicana/Chicano Politics§

Different models for interpreting and explaining the political experiences of women and men in the United States who are of Mexican origin. Emphasis on the following phenomena: political institutions, economic circumstances, nonelectoral activities, intragroup dynamics, gender issues, the evolving relationship between the United States and Mexico, and the development of ethnic identity.

45. Criminal Justice System

Basic understanding of the U.S. criminal justice system: police, courts, probation, imprisonment, parole, relations with other governmental agencies. Goals, successes, and failures of the system, and possible remedies.

50. World Geography

Provides an understanding of world geography through an appreciation of contemporary global problems. Problems include the environmental crisis, international relations, demographic trends, and economic development. Special emphasis on world hunger and the roots of Third World poverty. (Also listed as Sociology 50.)

90. Selected Studies in Public Policy

Introduction to the formulation and implementation of selected public policies in domestic or foreign policy areas.

UPPER-DIVISION COURSES

Prerequisites for all upper-division courses:

1. For *Political Philosophy* courses, 30 is required.
2. For *International Relations* courses, 25 is required.
3. For *Comparative Politics* courses, 2 is required.
4. For *U.S. Politics* courses, 1 is required.
5. For *Applied Quantitative Methods* courses, 1, 2, and 25 are required.
6. For *Senior Course Work,* at least one upper-division lecture course from the corresponding area (1–4 above) is required.

Note: In special cases, the instructor of a particular course may make an exception to these requirements.

Political Philosophy

101. Technology, Nature, and Political Philosophy

Examination of the interaction of technology with human nature and the natural environment. Authors discussed include Arendt, Baudrillard, Ellul, Galbraith, Haraway, Kant, and Marcuse.

108. Catholic Political and Social Thought

Survey of Catholic theories of church-state relations in history and at present. Catholic thought on state authority, forms of government, and purposes of society and the state. Evaluation of socialism, capitalism, and liberalism, from Catholic viewpoints.

111. History of Political Philosophy I: Greek and Christian

Development of Western political thought from its Greek origins in the work of Plato and Aristotle through the work of Aquinas.

§ Course included in Ethnic Studies Program

112. History of Political Philosophy II: Liberalism and Its Roots

Western political thought from Machiavelli through the origins of liberalism in the writings of Hobbes, Locke, and Rousseau.

113. History of Political Philosophy III: Post-Liberal Theories

Writers and themes in 19th- and 20th-century political thought including Marx, Nietzsche, Freud, and Lenin.

117. American Political Thought I: The Puritan Founding to the Civil War

Development of American political thought from the Puritan period through the Civil War. Conceptions of freedom, privacy, and public order, in the context of the racial, social, and economic development of the American Republic.

118. American Political Thought II: The Civil War to the Present

Development of American political conceptions from the late 19th century to the present. Focus on questions of social order, urbanization, the role of the state, violence and social reform, and racial and industrial justice.

International Relations

124. Contemporary Issues in U.S.-Mexico Relations

A multidisciplinary examination of the political, economic, and sociocultural relations between the United States and Mexico, including the most significant contemporary issues of agreement and disagreement. Discussion of the interpretations formulated by Chicanos, Mexican immigrants, and other sectors with transnational ties. (Taught as part of SCU's summer program in Mexico in conjunction with the National Autonomous University in Mexico.)

125. International Law

Sources, nature, and functions of international law in world politics. Special attention to the subjects of international law, international transactions, and the rules of war. Viewpoints presented from Western, socialist, and Third World perspectives.

126. International Organization

International organization in world affairs. Political, economic, and social role of the United Nations, regional organizations, specialized agencies, and nonstate transnational actors.

127. Comparative Foreign Policies

Comparative study of the foreign policies of selected nation-states. Interaction of international and domestic politics in foreign policy formulation and implementation.

128. U.S. Foreign Policy

Aims, formulation, and implementation of U.S. foreign policy since World War II, focusing on diplomacy, war, security, and trade.

129. Soviet and Russian Foreign Policy

The aims, formulation, and implementation of Russian foreign policy since World War II, focusing on the transition out of the Cold War.

130. Technology and Development in the Third World

Consideration of the relationship between technology and development in selected Third World nations. Subjects include technology and import substitution, technology and state power, technology and debt, and the search for alternate technologies to meet basic human needs.

135. Far Eastern International Relations

International political developments in the Far East from 1900 to the present. Analyses of geographic environment, political forces, and the impact of differing cultures on governmental decision making. *Prerequisites: Political Science 2 and 25.*

Comparative Politics

131. The Military in Politics

The political role of the military in developed and developing societies, using a variety of states as examples. In developing societies, topics include causes of military intervention, legitimacy-building efforts, and withdrawal from politics.

134. Race and Ethnicity in the Politics of Developed States

The role of racial/ethnic identity and conflict in the politics of states such as Germany, South Africa, the United States, the former Soviet Union, and the former Yugoslavia.

136. Politics in Central America and the Caribbean

Political cultures, processes, and institutions of Mexico and selected Central American and Caribbean states. Governmental organization, dependency, development, and political violence.

137. Politics in South America

Political cultures, processes, and institutions of selected South American nations. Government, dependency, development, and political violence.

138. Politics in South Africa

Examination of the politics in South Africa, historically and in the context of that nation's interaction with the world community. Topics include politics prior to apartheid; the establishment of apartheid and the growth of the African National Congress; the demise of apartheid and the transition to democracy.

139. Religion and Politics in the Third World

A comparison of the relationships between religion and politics in Asia, Latin America, and the Middle East. Emphasis on the current political influence of traditional organization and belief.

140. Politics in Less-Developed Countries

Multidisciplinary study of the problems and politics of political development in Latin America, Africa, and/or Asia. Case studies of communist and capitalist approaches to political development. Impact of international politics on internal development.

141. Comparative Study of Democracy

An examination of democracy-building in formerly authoritarian states and of the special political structures democracies create to preserve themselves.

142. Politics in the Middle East

Designed to give students an understanding of the complexities of Middle East politics, the importance of the region to the world, and the role history and religion have played in the political and social development of the various countries in the region.

143. Comparative Political Leadership

How leaders such as Boris Yeltsin, Nelson Mandela, Margaret Thatcher, John F. Kennedy, and Charles de Gaulle mobilize their nations and shape the formation of public policies.

144. Political Participation and Governments in Europe

An examination of selected states in Europe and the European commonwealth in terms of popular participation, party structures, and political institutions.

145. Politics of Former Communist States

An examination of the communist era in the former Soviet Union and the transformation that resulted from its failures. Emphasis on political economy, ethnic relations, and the development of democratic institutions in the new states.

146. African Politics

The problems of nation-building and economic development in sub-Saharan Africa. Case studies of Kenya and Tanzania.

147. Politics in Japan

Political history, institutions, and interest groups of modern Japanese political culture.

148. Politics in China

Origins of revolution in modern China, the politics of social and economic modernization in China since 1949, the problems of bureaucratization, political participation, and the succession to Mao Zedong.

149. Comparative Political Systems

Selected public policies in economically advanced societies. Relationship of political culture to social and economic behavior.

U.S. Politics

150. The Presidency

Analysis of the presidency as it has evolved throughout U.S. history. Comparison of presidential powers with those of Congress, the courts, the bureaucracy, the press, political parties, and the public.

151. The Congress

History, structure, and policies of Congress. Congressional elections and theories of representation, the committee system and congressional norms, lobbying, congressional ethics and reforms, and the power of Congress relative to the president and the bureaucracy.

152. Political Participation

An examination of who participates in U.S. politics and the various forms of political participation. Elections, political parties, interest groups, community organizing, and political protest.

153. Ethnic Politics[§]

A multidisciplinary and comparative analysis of the political experiences of Chicanos, African Americans, Asian Americans, and Native Americans. Emphasis on their relationship to social, political, and economic structures at the local and national levels. Interpretations of race/ethnic relations in the United States.

154. Women and Politics[‡]

A consideration of the various ways women have changed "politics as usual." Examination of the status of women today, varieties of feminist thought, women as voters and as an interest group, and women in public office.

[§] Course included in Ethnic Studies Program [‡] Course included in Women's Studies Program

155. Political Economy

Introduction to the relationship of the state to the private market distribution of resources and the achievement of individual and aggregate economic goals. Classical ideas of political economy, the functioning of capitalist and socialist political-economic systems, the role of the state and multinationals in the world and domestic economy, domestic fiscal and monetary policy, and imperialism and corporate power.

156. Politics and Mass Media

Impact of mass media on political values, attitudes, and behavior. Various forms of mass communication: print, graphic art, and film. Special attention to television.

158. The Constitution and Capitalism

Constitutional law doctrines and decisions concerning economic liberty and property rights. Emphasis on the relationship between U.S. constitutional principles and capitalist economic development and on the battle between FDR and the Supreme Court over the constitutionality of New Deal economic programs.

159. The Constitution and Liberty

Constitutional law doctrines and decisions regarding civil liberties. Topics include free speech and association, freedom of the press, religious freedom, and reproductive freedom.

160. The Constitution and Equality

Constitutional law doctrines and decisions regarding equal protection of the laws. Topics include race discrimination (particularly school desegregation and affirmative action), sex discrimination, discrimination against the poor, and discrimination based on sexual orientation. The shift from Warren Court liberalism to Rehnquist Court conservatism with regard to racial equality in education and employment.

161. Law and Politics in the United States

Examination of the U.S. legal system, its distinctive strengths and weaknesses. Topics include legal culture, the adversary system and its alternatives; system participants (litigants, lawyers, and judges); and legal versus political influences on judicial decision making. Special attention to the question of the capacity of courts to serve as agents of social change.

162. Urban Politics

Examination of political processes in the U.S. city. Special attention to the structures and institutions of urban political power and the changing forms of political action. Discussion of the historical development of urban social life, political cultures, racial/ethnic and class communities, political economy, and urban planning.

163. State and Local Politics

A consideration of the politics and processes of state and local governments, with particular attention given to California state, county, and municipal politics. Topics include federalism, executives, legislatures, courts, interest groups, parties, elections, financing, and issues such as education, welfare, criminal justice, transportation, housing, and urban growth.

165. Public Administration

Administration of public policies in terms of broad questions of democratic theory. Organizational theory, public employees, budget making, policy evaluation, and public finance.

166. Special Topics in Public Administration

Various public administration topics, often making use of experts outside the University. Public sector labor relations, public budgeting and finance, administration of county and city government, and public personnel policies.

167. The Making of Public Policy

An examination of the nature of U.S. public policy and policy analysis; public policy-making stages (agenda setting, legislative legitimation, implementation, budgeting, and evaluation); and substantive policy issues such as economics, poverty and social welfare, health, education, energy, environment, defense, criminal justice, gender, and housing. A comparison of U.S. policies with those of other advanced industrial nations.

168. Special Topics in Public Policy

Selected topics and problems in public policy.

Applied Quantitative Methods

170. Research Methods in Political Science

An introduction to some of the competing theories, paradigms, and methods used to analyze politics. After a general discussion of the philosophy of science—especially the debate about whether a "science" of politics is possible—students examine various approaches to the study of politics, including case studies, historical analysis, formal theories, and statistical models.

172. Research Methods in International Relations

An introduction to the development and application of statistical models of international relations. After a review of substantive issues in the field, students examine the research designs used to evaluate theories of international conflict and cooperation.

173. Research Methods in Comparative Politics

An introduction to the literature of comparative politics that is primarily, but not exclusively, based upon empirical data. After a review of some important ideas about research designs, data generation, and data analysis, students learn how to develop and apply statistical models.

174. Research Methods in American Political Behavior

An exploration of the U.S. electorate, with special attention to analyzing factors that prompt individuals to vote in particular ways. Techniques of quantitative political analysis, including the computerized manipulation of survey research data.

Senior Course Work

180. Honors Research Projects

Independent research and writing on a selected topic or problem. Limited to members of the Political Science Honors Program.

183. Seminar in Comparative Politics

Selected topics in comparative politics in various states and regions.

184,‡ 185, 186. Seminar in U.S. Politics

Selected topics and problems in the American political process.

190. Seminar in Research Methods

Plan and conduct political science research on selected topics such as political communication and socialization.

191. Seminar in Political Philosophy

Analysis of selected philosophers or particular themes in political philosophy.

‡ Course included in Women's Studies Program

192. Seminar in Political Philosophy

Discussion and analysis of the relationship between politics and aesthetics. Special emphasis on the aesthetic theories of Kant, the Dadaists, the Socialist Realists, and Herbert Marcuse.

193. Seminar in World Revolutionary Forces

Theories of revolution that deal with the psychological, social, and political aspects of change. Studies of revolutionary movements and societies.

196. Seminar in International Relations

Selected aspects of international political behavior.

198. Public Service Internships

Directed internships in government agencies, legislative bodies, political parties, or interest groups. *Open to qualified juniors or seniors with permission of the instructor.*

199. Directed Reading

Independent study. Intensive work in areas not fully covered in upper-division courses. *Written outline of the proposed course, with signatures of the sponsoring instructor and department chair, must be submitted to the Office of the Dean at least one week prior to registration.* The student's copy of the approved form must be presented when the student registers. Forms are available at the Registrar's Office.

DEPARTMENT OF PSYCHOLOGY

Professors: Jerry M. Burger, Stephen S. Fugita, Robert Numan, Marvin L. Schroth, Eleanor W. Willemsen *(Chair)*
Associate Professors: Tracey L. Kahan, Roland C. Lowe, Gerdenio M. Manuel, S.J., Thomas G. Plante
Assistant Professors: Patricia M. Simone, Timothy C. Urdan
Acting Assistant Professor: Kieran T. Sullivan

Psychology is the study of behavior, emotion, and thought using techniques modeled on the scientific method. At the undergraduate level, the study of psychology is part of a liberal education; a major in psychology lays the groundwork for various advanced studies, including the pursuit of graduate degrees needed for the professional practice of psychology. The department offers introductory courses in each major area of the discipline and courses in experimental methods.

REQUIREMENTS FOR MAJOR

Students majoring in psychology must fulfill the University Core Curriculum and College requirements and satisfactorily complete the following courses:

Lower-Division Courses in Psychology (4 courses)

1. Psychology 10, 11, and 40
2. Psychology 42 or 43

Lower-Division Courses Outside of Psychology (2 courses)

Mathematics 6 (Finite Mathematics for Social Science) and 7 (Calculus for Social Science) or Mathematics 11 and 12 (Calculus and Analytic Geometry I and II)

Upper-Division Courses in Psychology (8 courses)

1. Two courses related to Psychology 10 (Psychology as a Natural Science) from among 112, 120, 130, 131, and 165 or 166
2. Two courses related to Psychology 11 (Psychology as a Social Science) from among 115, 150, 160, and 185
3. ***Capstone Course Requirement*** During their senior year, psychology majors must complete one course from among 118, 168, 170, or 195.

   In special cases, a student may meet the Capstone requirement by conducting an independent research project. Students who select this option must enroll in Psychology 199. They also must submit a proposal and receive permission from a supervising faculty member and the department chair by the end of the seventh week of the quarter prior to the quarter they enroll in Psychology 199.
4. Three additional elective upper-division psychology courses

SPECIAL EMPHASIS PROGRAMS

Psychobiology

In addition to the Bachelor of Science and departmental requirements, students who wish to study neuroscience may elect the psychobiology concentration. The following requirements incorporate the psychology major:

1. Mathematics 11 and 12 (Calculus and Analytical Geometry I and II)
2. Chemistry 5 and 6 (General Chemistry I and II) and 35 and 36 (Organic Chemistry I and II)
3. Biology 91 (Populations), 92 (Physiology), and 93 (Cells)
4. Psychology 10, 11, 40, 42 or 43, 130, 165 or 166; two courses from 115, 150, 160, and 185; one Capstone Course; and three additional elective, upper-division psychology courses
5. Two courses from Biology 101, 110, 115, 124, and 165

Gerontology

In addition to the Bachelor of Science and departmental requirements, students who wish to study the elderly should inquire about the Gerontology Certificate Program (Pages 277–78).

LOWER-DIVISION COURSES

Note: For courses that charge fees, see the Undergraduate Schedule of Classes.

5. Honors Colloquium

Restricted to students in the University Honors Program. The honors version of Psychology 10. Available only in alternate years.

6. Honors Colloquium

Restricted to students in the University Honors Program. The honors version of Psychology 11. Available only in alternate years.

10. Psychology as a Natural Science

Scientific study of human and animal behavior, including the physiological basis of behavior, perception, learning, memory, motivation, and emotion. Other topics may include language, problem solving, sleep, and dreaming.

11. Psychology as a Social Science

The psychological study of human behavior with an emphasis on the social side of psychology. Topics include human development, personality, abnormal behavior, clinical intervention, and social psychology. Introduction to research methods and statistical analysis of data.

40. Statistical Data Analysis

Exercises designed to teach the skills of statistical data analysis and technical writing in psychology. *Prerequisite: Math 6 or 11.*

42. Experimental Psychology

Basic principles and methods of experimental psychology. Emphasis on the experimental method, but other methods (e.g., naturalistic observation) are discussed. Analysis and application of group and single-subject experimental designs. Survey of the learning and the sensation and perception literature. Application of lecture material in the laboratory: the conduct of a number of experiments using human and animal subjects. Lectures and laboratory. *Prerequisites: Psychology 10 or 11 and 40.*

43. Research Methods in Psychology

Investigation of methods of psychological research and issues involved in the collection of data. Emphasis on the social, personality, cognitive, and developmental areas of psychology. Exercises require designing research projects, collecting data, and writing professional reports. *Prerequisites: Psychology 10 or 11 and 40.*

UPPER-DIVISION COURSES

Note: Prerequisites for all upper-division courses, in addition to those listed for specific courses, are 10 or 11, 40, 42 or 43, or permission of instructor. Nonmajors are encouraged to seek permission of instructor. For courses that charge fees, see the Undergraduate Schedule of Classes.

105. Statistics and Experimental Design II

Advanced topics in theory and methods of statistical analysis and experimental design. Complex analysis of variance, multiple correlation and regression, factor analysis, and an introduction to nonparametric statistics.

112. Motivation and Emotions

Scientific study of the various motivational-emotional processes of people and higher animals. Biological drives, psychological survival needs, altered states of consciousness, social motives, and theories of emotion.

113. Sports Psychology

An overview for preparing a person psychologically to be active in sports. Ways for athletes to maximize their potential as well as ways to activate nonathletic individuals to be involved in sports. Topics include drug abuse by athletes, children and sports, team cohesiveness, sport injuries, fitness and health, anxiety and competition, women and sports, and race, ethnicity, and sport.

114. Ethics in Psychology

The role of ethical behavior and decision making in the field of psychology and related behavioral, medical, and social sciences. Topics include issues related to competence; integrity; professional, scientific, and social responsibility; respect for others' rights and dignity; and concern for others' welfare.

115. Abnormal Psychology

The study of psychology and human behavior in understanding the etiology, nature, development, and treatment of mental illness. Topics include models of abnormal behavior, research, diagnosis, assessment, and treatment of emotional and behavioral disorders, such as affective disorders, personality disorders, sexual disorders, substance abuse disorders, and childhood disorders.

116. Psychosomatic Medicine

Psychosomatic medicine involves the role of psychological functioning and human behavior in the development and maintenance of illnesses and medical problems. Topics include the history and perspectives of psychosomatic medicine as well as a wide variety of psychosomatic disorders, such as eating, panic, irritable bowel, ulcer, conversion, trichotillomania, somatoform, Munchausen's syndrome, and others.

117. Health Psychology

Health psychology involves the discipline and principles of psychology and human behavior in understanding how the mind and body interact in health and disease. Topics include health promotion and primary prevention of illness, health-enhancing and health-damaging behaviors, psychosomatic illness, stress and coping, pain management, and a variety of specific behavior-related medical illnesses (e.g., heart disease, eating disorders, cancer, and AIDS).

118. Advanced Topics in Clinical/Abnormal Psychology

An in-depth study of major mental illness and its treatment. Topics include disease prevention, community care, diagnosis, assessment, multimodal treatment, etc. Three hours per week of volunteer clinical work required. Meets Capstone Course requirement. *Prerequisite: Psychology 115, 116, or 117.*

119. Minority Mental Health

Examination of the mental health and well-being of U.S. minority groups. Topics include culture and discrimination, measurement of psychopathology and training, and culturally appropriate service delivery.

120. Perception

A theoretical and empirical investigation of human perceptual processes, with an emphasis on visual perception. Topics include psychophysiology of vision; perceiving visual space (shape, contrast, orientation, distance, depth, motion); color perception; perceptual illusions; development of perception; imagining vs. perceiving; effects of knowledge on perception; perception in "novel" environments.

130. Psychology of Learning and Thought Processes

Survey of the experimental literature on the basic forms of the learning process from animals to humankind. Latest theories on memory and thought processes.

131. Cognitive Psychology

The information-processing approach to how we pay attention to, perceive, remember, discuss, and think about the world around us. Includes the history of the discipline and the following research areas: consciousness and attention, perception, memory, imagery, psycholinguistics, and problem solving. Emphasis on the experimental methods that have been developed to study cognition.

134. Psychology of Education

See Liberal Studies 134.

135. Psychology of Sleep and Dreaming

An empirical investigation of the nature of sleep and dreams. Emphasis on physiological, cognitive, and functional approaches. Topics include psychophysiology of sleep and dreams; theories of sleep (especially REM sleep) and dream function; continuity in mental processes during the sleep/wake cycle; memory for dreams; types of dreams; consciousness and dreaming; lucid dreaming.

144. Psychological Assessment

Principles and issues related to testing and measurement in psychology. Topics include test construction, reliability, validity, and the professional and ethical use of psychological tests and test scores.

150. Social Psychology

The scientific investigation of social behavior. Topics include communication, attraction, person perception, attitude change, aggression, altruism, and group behavior.

152. Social-Clinical Psychology

The interface between social psychology and clinical psychology. Emphasis on how theory and research from social psychology can be used to better understand topics of interest to clinical psychologists, including personal adjustment and well-being, coping, abnormal behavior, clinical diagnosis, and the effects of psychotherapy.

156. Prejudice and Discrimination§

Examination of structural and individual level theories of prejudice and discrimination as they relate to race and ethnicity, gender, and sexual preference. Topics include segregation and integration, economics and discrimination, racism and sexism on campus, and research in minority communities.

157. Organizational Psychology

Effects of organizational structure on individual and group behavior. Principles of behavior that may be applied to various large organizations, such as corporations, universities, and hospitals. Job satisfaction, group decision making, power, leadership, and communication.

159. Religion in the Theories of Freud and Jung

See Religious Studies 180.

160. Personality

The study of individual differences and personality processes. Discussion of major theories of personality and their application to psychotherapy. Presentation of current research topics in personality and methods for assessing individual differences and other personality constructs.

162. Cross-Cultural Psychology

Some of the research findings of American psychology do not apply to other societies. This course identifies universal findings and contrasts them to those that are unique to particular cultures. It also examines cross-cultural encounters.

165. Physiological Psychology

Emphasis on the neuroanatomical, neurochemical, and neurophysiological correlates of motivation, emotion, learning, and memory. Neural regulation of sleep and arousal, mechanisms of drug action, and neuropathology. Brain anatomy and

§ Course included in Ethnic Studies Program

application of physiological techniques to the study of animal behavior. Lectures and laboratory.

166. Human Neuropsychology

Study of human brain function from an experimental perspective. Addresses questions such as: What are the brain mechanisms that lie at the basis of perception and memory, of speech and thought, of movement and action? What happens to these processes when individual parts of the brain are destroyed by disease?

167. Psychopharmacology

Examination of the effects of various drugs, such as nicotine and alcohol, and abnormal neurochemical states, such as schizophrenia and depression, on mental functioning and behavior. Topics include the effects of various drugs on the brain and the biochemical basis of human neurosis and psychosis.

168. Advanced Topics in Neuroscience

An integration from various subdisciplines in psychology with an emphasis on the brain and behavior. Topics include neural development from fetus to early childhood, neural basis of psychopathologies (e.g., schizophrenia and depression), cognitive functions (memory, attention, and learning), and personality and related disorders. Meets Capstone Course requirement.

170. History and Systems of Psychology

Origin and development of modern psychological approaches. Psychoanalysis, behaviorism, Gestalt, humanism, and existentialism. Emphasis on conceptual issues. Focuses on selected topics viewed from the multiple conceptual frameworks and subdisciplinary perspectives that characterize psychology's history. Meets Capstone Course requirement.

175. Humanistic Psychology

Historical and conceptual roots of humanism. Implication of the "third force" for therapy, community living, education, and research. Special attention to humanistic psychotherapies and the application of humanistic principles to education. Three hours per week of community volunteer work required.

185. Developmental Psychology I

First course in a sequence of courses that explores the development of individuals during the life cycle. Topics for the sequence include (1) principles and theories of development; (2) perceptual, cognitive, social, and personality development; (3) family, school, and other societal influences on development; and (4) applied issues in child rearing, education, and other socialization practices. Students have an opportunity to clarify their own values about having and raising children and about the responsibilities of society in general to children.

186. Developmental Psychology II

Continuation of Psychology 185. Special attention to intelligence, schools, sex roles, achievement, and prejudice. *Prerequisite: Psychology 185.*

187. Developmental Psychology III

Continuation of Psychology 186. Puberty through early adulthood. Intellectual development, identity, sexuality, moral development, values classification, and the capacity of humans to change. *Prerequisite: Psychology 185.*

188. Adult Development

Limited enrollment. Young adulthood through middle age. Stages and transitions in adult life, the concept of life crisis, and the interplay of situations and personality. Commitment and choice. Part of gerontology emphasis. Available only occasionally.

195. Research Practicum

Advanced methodological issues taught primarily through direct involvement in an experimental research project. Activities include reviewing the literature, formulating a research question, developing a design and procedure, collecting and analyzing data, and writing a professional research report. Meets Capstone Course requirement.

196. Psychology of Aging

Changes in individual lives that come with aging. Consideration of changes within the person and those occurring in the life situation. Special attention to mental health institutionalization and stresses facing the aged.

197. Advanced Seminar

Intensive focus on selected specialized topics, which vary from year to year. Available only occasionally. *Prerequisite: permission of instructor.* NCX†

198. Internship/Practicum

Clinical experience in community agencies. Selected readings. Open to upper-division students with an average 3.0 GPA or higher who have received permission of a faculty sponsor.

199. Directed Reading/Directed Research

Independent projects undertaken by upper-division students with a faculty sponsor. To receive course credit for such research, the student must submit a formal written proposal and have it approved by the sponsoring faculty member and the department chair. The proposal must be submitted before the end of the previous quarter and must meet University requirements for independent study credit (available from the department chair).

DEPARTMENT OF RELIGIOUS STUDIES

Professors: Denise L. Carmody *(Chair)*, Joseph A. Grassi
Associate Professors: Catherine M. Bell, Martin L. Cook, Paul G. Crowley, S.J., Diane E. Jonte-Pace, Anne Marie Mongoven, O.P., Frederick J. Parrella, David Pinault, John David Pleins, Stephen A. Privett, S.J., James W. Reites, S.J., Philip Boo Riley, Francis R. Smith, S.J., William C. Spohn
Assistant Professors: Paul Fitzgerald, S.J., Carmichael C. Peters
Acting Assistant Professor: Catherine Murphy
Lecturers: Rita Claire Dorner, O.P., Ana Maria Pineda, RSM, Joan M. Rappaport, Salvatore A. Tassone, S.J., Tennant C. Wright, S.J.
Bernard J. Hanley Professor: Denise L. Carmody
Presidential Professor of Ethics and the Common Good: William C. Spohn

The Department of Religious Studies offers courses as part of the University Core Curriculum and a major program for those who wish to concentrate in the study of religion and theology. An academic minor is also available.

The aim of the program is to foster an engaged, critical, and integrated understanding of religion in the University's tradition of Jesuit liberal education. Because of the University's commitment to examine diverse religious traditions, the Department of Religious Studies offers a wide range of courses; because of the University's commitment to the Catholic tradition, the department also offers

† Exempted from challenge

a special opportunity for students to pursue and examine Catholicism in an academic context.

REQUIREMENTS FOR THE CORE

Three religious studies courses: (a) two courses, normally taken during the freshman and sophomore years—one introductory level and one intermediate level; and (b) one advanced-level course taken after completing 88 quarter units.

The Religious Studies Department offers courses in three main areas: **Scripture and Tradition; Theology, Ethics, and Spirituality;** and **Religion and Society.** Students can take courses in any area they wish, either sampling several areas or concentrating in one. However, they must take their three courses **in sequence on the proper level**—introductory, intermediate, and advanced.

Introductory-level courses are numbered 1–19 and are offered in each of the three areas. The introductory course must be taken in the freshman or sophomore year. Intermediate-level courses are numbered 20–99 in each of the three areas, and must be taken in the sophomore or junior year after completion of the introductory course. Advanced-level courses are numbered 100–199 in all three areas, and must be taken in the late junior or senior year as the third course in religious studies.

Elective courses in religious studies can be taken at any time and at any level.

REQUIREMENTS FOR MAJOR AND MINOR

Major in Religious Studies

The major program is designed to combine flexibility with a solid foundation. To that end students are required to fulfill the following requirements:

Lower-Division Courses Complete four lower-division courses, one from each of three areas: (1) Scripture and Tradition (SCTR); (2) Theology, Ethics, and Spirituality (TESP); and (3) Religion and Society (RSOC), plus one in any area.

Upper-Division Courses Complete eight upper-division courses. Of these eight courses, four must be specifically designated Religious Studies Seminars (RSS), with one in each of the three areas, the fourth in any area. Two seminars are offered each quarter for majors and minors.

Senior Research Paper Submit a senior research paper, completed under the direction of a faculty member during the senior year, preferably fall or winter quarter. The paper may be completed in Religious Studies 199 (Directed Reading and Research) or in a religious studies seminar course.

Students interested in a double major should consult their religious studies adviser.

Minor in Religious Studies

The minor in religious studies requires completion of one introductory-level religious studies course (1–19); two intermediate-level courses (20–99); and four

advanced-level courses (100–199), one of which must be a Religious Studies Seminar (RSS). Of these seven courses, at least one must be in each of the following areas: (1) Scripture and Tradition (SCTR); (2) Theology, Ethics, and Spirituality (TESP); and (3) Religion and Society (RSOC).

GRADUATE PROGRAM

The Religious Studies Department also offers a Pastoral Ministries Program that offers a master's degree in four areas: catechetics, pastoral liturgy, spirituality, and liturgical music. For more information about the program and a copy of its brochure, contact the Pastoral Ministries Graduate Program.

COURSE DESCRIPTIONS BY AREAS

Area I: Scripture and Tradition (SCTR)

Note: Introductory courses are 1–19; intermediate, 20–99; advanced, 100–199.

1. Old Testament and Its World

Survey of the historical and religious traditions of ancient Israel. Attention given to the archaeology of Syro-Palestine. Emphasis on the role of the Old Testament in Judaism, Christianity, and Islam.

2. Introduction to the New Testament

Deals with the historical and religious background of the New Testament period and concentrates on the origin and purpose of the New Testament writings and the overall meaning of the individual books.

11. Origins of Western Religion

An introduction to the academic study of religion through an inquiry into the origins of Western religion. Surveys the principal themes and issues of the formative period of the Judeo-Christian tradition and its historical development to the fifth century. Some sections of this course are reserved for students in the Freshman Residential Program.

19. Introduction to Peoples of the Book

Examines history and religious traditions of Hebrew Bible in context of Middle East and developments of these traditions in histories and belief systems of Judaism, Christianity, and Islam. Includes attention to the geography and politics of the region.

20. Bible in the Jewish Tradition

Exploration of the Hebrew Bible and the development of the Jewish exegetical tradition from the Hellenistic period to the present. Survey of various issues in critical biblical studies.

21. Hebrew Bible and Ancient Mythology

Explores the variety of Old Testament literature: sagas and legends, royal history, love poetry and hymns, and wisdom teaching. Examines the narrative and poetic technique of biblical writers as well as their values and ideas. Comparison with ancient Near Eastern literature.

22. The Synoptic Gospels

A survey of the Gospels of Mark, Matthew, and Luke in light of the findings of modern scholarship. Special attention given to the relationships among the Gospels, the particular situations of the churches in which they were written, and the special intentions and considerations of the authors.

23. Christ in the Four Gospels

Deals with the historical ministry of Jesus, and with his resurrection and how his disciples and the church of the New Testament period interpreted Jesus' teaching and developed their belief about Christ. Concentrates on the Gospel portrayal of Jesus Christ.

24. Luke/Acts

The Gospel according to Luke and the Acts of the Apostles as a unified document with special emphasis on its sources, message, and theology.

25. The Bible and Archaeology

Surveys the historical and archaeological background of the Hebrew Bible and the New Testament. Organized chronologically, covering the major cultural and religious developments in the Holy Land from the Neolithic to the Crusades.

29. Biblical Drama

Examines how biblical materials assist human transformation and faith. Mime, role playing improvisation, psychodrama, and story dramatization used to explore and unlock the riches of biblical stories.

100. Biblical Poetry and Ancient Myth

Comparative study of the poetry and myths of ancient Israel and the ancient world. Focuses on the Psalms, the Song of Songs, and the Book of Job. Examines a number of Mesopotamian, Canaanite, and Egyptian myths. Discusses the methodological problem of mythic interpretation.

101. Biblical Criticism: Hebrew Bible

Advanced examination of critical methods in the study of the Hebrew Bible. Topics include textual methodologies, archaeological interpretation, feminist/liberation hermeneutics, and the use of scripture in theology.

104. Pauline Letters

Examines the letters attributed to Pauline authorship and develops an analysis of Pauline theology.

105. Johannine Writings

Examines the Johannine literature: the Gospel of John and the three letters of John and the Apocalypse in order to understand their impact on the contemporary Church and on the development of Christianity. Special attention given to the person of Jesus in the fourth Gospel, and to the Christian conflict of conscience in regard to the state in the Apocalypse.

106. Person of Christ in the New Testament

Deals with Jesus' understanding of himself and his mission as well as the New Testament interpretation given to them. Different Christologies of the New Testament studied in order to show the unity and diversity in their interpretation of Christ.

107. Scripture and the Moral Life

Investigates the role that Scripture plays in the moral life of Christians with special attention given to the figure of Jesus Christ. Is it possible to draw a theological ethic from the experience of discipleship? How did the early Christian communities adapt the teachings and example of Jesus to their contexts? How have Christians in different cultural contexts learned from Scripture? How should Christians today apply that story to a vastly different world? Considers the perspectives of liberation theology, social scientific approaches, feminist criticism, and the role of the imagination in religious experience to address these issues.

109. The Bible and Ecology

The Bible is a resource for responding to current ecological issues that involve a complex net of ethical, economic, scientific, and gender-related challenges. The environmental crisis affects earth, oceans, air, animals, and human populations. In

dialogue with these concerns, course considers themes from prophetic, poetic, wisdom and apocalyptic literature, and the life and teaching of Jesus. Enrollment priority is given to seniors and juniors in the Environmental Studies Program.

114. Women in the New Testament‡

Focuses on passages in the New Testament that concern the relations of men and women in the context of prototypes found in the Hebrew Scripture. Discusses principles of feminist interpretation proposed by women who represent an international slate of theological voices today. Fulfills the Women's Studies requirement.

198. Practicum

199. Directed Readings and Research

For religious studies majors only.

Area II: Theology, Ethics, and Spirituality (TESP)

Note: Introductory courses are 1–19; intermediate, 20–99; advanced, 100–199.

3. Introduction to Religious Reflection

Designed especially for atheists, agnostics, and those disaffected from church or religion. Through readings, written essays, and discussion, students are encouraged to raise and reflect on whatever questions are of deepest importance to them. Requires meditation each class morning from 7:20 to 7:50 a.m.

4. Introduction to Christian Tradition

A survey of the history and development of the Christian tradition from the New Testament to contemporary U.S. Christianity. Readings include a few classics of Christian theology from major periods, portions of the Bible, and a survey text of Christian history. Each section has a different emphasis.

5. Catholic Theology: Foundations

Introduces students to fundamental issues pertaining to divine revelation. The first part of the course examines human openness to God; models for understanding God's self-disclosure (through historical mediation, personal experience, doctrine, dialectical presence, and transcendental awareness) and symbolic self-communication. The second part adopts a Catholic theological approach to discuss tradition, Scripture, and magisterium.

6. Catholic Theology: Spirituality

Explores some of the rich and varied expressions that the Christian faith has taken in the Catholic Church. Introduces the tools and methods of Catholic theology. Focuses on assisting and equipping the student to understand and interpret experience and the world from the faith perspective called Catholicism. Reading, reflection, and discussions encourage students to formulate and consider genuine theological questions.

12. Medieval, Renaissance Religion

This course questions: (1) how does one objectively study religion and (2) what does it mean to be religious in the world today? As a focal point for these questions, course concentrates on the religious experience, philosophical themes, and social and ecclesiastical history of religion in the West from the end of the Roman Empire until after the Protestant Reformation. Course forms part of the Freshman Residental Program.

30. Christ in the Christian Tradition

Examines the message and meaning of Jesus Christ by considering: (1) the images of Jesus in modern culture; (2) the New Testament picture of Jesus; (3) the theology of the death and resurrection of Jesus; (4) Jesus in the doctrinal tradition of the Church; and (5) contemporary theological interpretations of Jesus in the light of modern human experience.

‡ Course included in Women's Studies Program

32. Theology of the Sacraments

Analysis of the work of Christ as sacrament of God the Father, of the Church, as the sacrament of Christ, and of baptism, confirmation, reconciliation, healing, the Eucharist, and orders as the principal sacramental actions of the Church. (Marriage is studied in a separate course.) Origins in the Scriptures. Traditional theological interpretations.

33. Christian Liturgy

Designed to develop a sense of what Christian liturgy—or a communal celebration of worship—involves. Students assemble and critically evaluate different types of liturgical celebrations (Masses, marriage ceremonies, baptisms, etc.). Course provides some history and liturgical theory, but the main effort will be devoted to composition, by the student, of Christian liturgies.

34. Religious Symbolism and Myth

Introduction to the meaning and function of symbol and ritual in human life and in Christian worship. Studies symbolic ritual actions of the Church (sacraments).

36. Theology and Ethics of Thomas Aquinas

An introduction to the life, thought, and ethics of Thomas Aquinas. Basic topics include the existence of God, human nature, and human participation in society.

38. Contemporary Catholic Theology

A treatment of recent attempts within Catholic theology to interpret and articulate ancient faith traditions regarding the meaning of Jesus Christ for the contemporary church. Includes contemporary assessments of classic theologies as well as a survey of contemporary Catholic approaches to the interpretation of Scripture and traditions.

39. Catholic Theology: Christology

An introduction to contemporary Catholic Christology. The approach is that of a Christology "from below," that is, after initial consideration of some fundamental theological concepts, course examines Jesus Christ as a *historical* figure and object of faith. Course pivots around Jesus' proclamation of the "Kingdom of God" and considers his history through the resurrection. If time allows, emergence of reflection on Jesus in the New Testament and Patristic periods pursued.

41. Christianity and World Religions

Religious pluralism as understood primarily in Judeo-Christian tradition. Revelation, authority, truth, and intrareligious dialogue. Analysis of religious truth claims, Buddhist-Christian dialogue, and meditation East and West.

42. Theology of C.S. Lewis

A study of the religious writings of C.S. Lewis. Examines Lewis' approach to religious truth, and analyzes the major theological themes that are his concern.

45. Christian Ethics

Dynamics of Christian conduct and of the moral implications of the Christian commitment. Formulation of the principles of a Christian ethic, their application to selected areas of moral conduct in contemporary life (e.g., to wealth and poverty, violence and nonviolence, war and peace, bioethics and interpersonal relations). Some sections require a Santa Clara Community Action Program (SCCAP) or Eastside Project placement.

46. Faith, Justice, and Poverty

Examines biblical theologies of social responsibility, major theologians on poverty, and current appropriations of these traditions. Mandatory Santa Clara Community Action Program (SCCAP) or Eastside Project placement.

47. African American Slave Theology

Introduces students to the religious world views, beliefs, and practices of African American people during slavery. Reviews interviews of slaves to hear their own voices. Asks: How do slaves "tell their story"? Why and how did they understand religion differently from their white slave masters?

49. Christian Mysticism

A study of the lives and writings of key figures in the mystical traditions of Christianity.

51. Contemporary Christian Spirituality

A study of post–Vatican II spirituality with a focus on the place of spirituality within Christian belief and practice and its roots in the Hebrew and Christian Scriptures and tradition. Examines spirituality in contemporary life: forms of prayer; asceticism; mysticism; classic questions/issues.

53. Religious Imagination

Through reflection, written essays, and discussions of selected pieces of literature, films, and art, course attempts to stimulate the imagination and clarify its relation to religion.

54. Meditation

Study and practice of meditation. Daily meditation. No lectures. Class discussion, weekly brief essays.

55. The Catholic Novel

Involves a careful reading of nine modern novels dealing with Roman Catholic themes, the writing of a brief essay each week, and active participation in class discussion. No lectures. Grades depend 50 percent on the quality of the essays and 50 percent on the quality and regularity of discussion.

115. Tradition and Interpretation

An examination of issues of theological hermeneutics in the Bible and doctrine. Readings include Aquinas, Newman, Rahner, Schneiders, Johnson, and Gadamer.

116. Christ in Contemporary Thought

A study of some of the issues currently surrounding the central figure of Christian faith, including new theories about the historical Jesus obtained from scriptural and historical studies, theological approaches to the "divinity" claim, and the implications of Christian faith for contemporary cultures and social problems, Course rotates through several authors. including Sobrino, Johnson, Schillebeeckx, and Rahner.

117. God in Contemporary Thought

Explores the reality and meaning of God as absolute mystery, truth, and goodness in today's culture. Contemporary theological and philosophical approaches to the topic attempt to unlock the mystery of self, God, and the world.

118. Great Christian Mysteries

Review of fundamental Catholic beliefs. Analysis of ecclesiology and theological anthropology.

119. Jesus: The Easter Mystery

This course has three essential moments. First, careful consideration of the New Testament testimonies. Second, specific attention to contemporary Protestant and Catholic interpretations of the Resurrection traditions. Third, probing the implications of Easter faith for diverse ecclesial and sacramental theologies. Some sections require Eastside Project placement.

121. Theology of the Church

A theological study of the Christian community from its historical origins in Jesus and the Scripture to its nature, diverse forms, and relevance in the modern world.

123. Christian Experience of God

Nature of religious experience. Emphasis on how the Christian community expresses or symbolizes its experience of God in creed, doctrine, and liturgy.

124. Theology of Marriage

An examination of human relationships, intimacy, and marriage in the modern world in light of the foundational, constitutive, and graceful presence of God. Themes include: (1) nature and method of a theology of marriage; (2) relationships, sexuality, and marriage in modern culture; (3) an ontology of love and the classical types of love; (4) love between husband and wife as the image of God's inner life as Trinity; (5) marriage as a sacrament and its foundation in the death and resurrection of Christ; and (6) a spirituality of marriage.

125. Belief and Unbelief

The question of religious belief has been a vital part of the world's cultures and civilizations. In the modern West, however, new and dramatic forms pose the question. Course studies why and how this is so through reading a variety of proponents of both believers and unbelievers, including Nietzsche, Camus, Freud, and Teilhard de Chardin.

126. Theology and Drama

Examines the theological questions and issues raised by some great plays. In many ways, it is a Capstone Course, which requires both critical thinking and imaginative engagement in examination of drama texts. It is founded on Karl Rahner's belief that the contemporary task is not to drive religion into people but to draw it out of them. This concern is foundational and shapes inquiry into the drama text to search for the ways that these plays frame and address questions of ultimate significance.

127. Black Theology in the United States

A critical assessment of black theology of liberation as it has developed from the 1960s in the United States, including the demands of black women. Questions why a black theology, and it challenges individual religious and theological perspectives.

128. Issues in Contemporary Catholicism

Attempts to chart the complex process by which Catholicism both freed itself from its traditional fear of modernity and articulated a program for apostolic insertion into the modern world. Special emphasis placed on a comparative study of the ecclesiologies of Trent, Vatican I, and Vatican II. In addition, examines particular issues in Roman Catholic thought presently receiving considerable reflection and scholarship.

129. Readings in Theology

Intended for students who want to read and discuss in depth a few seminal thinkers in Christian theology and philosophy of religion. Included are Thomas Aquinas, Martin Luther, John Calvin, Jonathan Edwards, David Hume, Karl Rahner, and Friedrich Schleiermacher.

130. Liberation Theology

Latin American, African, Asian, and feminist theologies of liberation. Assessment of the impact of these theologies on such issues as ecclesiology, method in theology, Christology, biblical interpretation, and spirituality, as well as the implications for North Americans.

131. Feminist Theology‡

Examination of central issues emerging in feminist theology. Exploration of biblical sources, women in the Christian tradition, sexuality, ethics, morality, and new directions for women in Christianity.

‡ Course included in Women's Studies Program

134. Black Women's Spirituality in Toni Morrison's Novels

A religious and cultural investigation of spirituality in the lives and thoughts of black women in the novels of Toni Morrison. Examines theological methodology, the religious bases of spirituality, and the normative claims in poor black women's faith experiences.

138. Paul Tillich

An examination of the key ideas in Paul Tillich's philosophical theology, including Tillich's method of correlation, his understanding of God, religion, and faith, and his effort to interpret the classical Christian doctrines in terms that make sense to the modern, post-Enlightenment individual.

139. Karl Rahner: The Human Condition

Examines Rahner's theology of the human person as the intersection of the creaturely and the divine. Topics include grace, guilt, freedom, suffering, death, love, realism, and hope. Because course is geared toward the general student, not necessarily toward religious studies majors, readings will be selected accordingly.

140. Bernard Lonergan

Investigates the resources for the philosophy of religion in Bernard Lonergan's writings. Intended for students who enjoy serious philosophy. Emphasis placed on class participation and writing exercises.

144. Theology and the Law

A team-taught course meeting two evenings a week (Monday and Wednesday) in which two professors, one in law and one in theology, discuss a number of contemporary legal/ethical issues from both perspectives.

145. Afterlife as a Theological Concept

Examines the historical development and contemporary plausibility of beliefs regarding death and afterlife in the Christian tradition. Begins with an analysis of the emergence of beliefs regarding afterlife in the Bible. Examines the historical circumstances for their modification throughout that tradition. Then, drawing on philosophical discussions of the mind/body problem, artificial intelligence literature, and brain research, examines in detail the plausibility of disembodied existence and relevant evidence for and against the existence of an afterlife.

147. Religious Autobiography

Selected Christian autobiographies from St. Paul to Dag Hammarskjöld.

148. Literature and Theology

Discussion of the religious aspects of various works of significant world literature. A brief well-written essay on the material for discussion required each class session.

149. Faith and the Holocaust

A historical examination and theological and philosophical reflection upon the Nazi attempt to exterminate Jews totally. Considers the problems posed for faith by this instance of evil.

151. Issues in Theology and Science

Explores how theology and science arrive at views of the world and the basis of conversation between theology and science. Theoretical applications drawn by exploring Galileo, Darwin, evolution, cosmological theory, and ecological theology.

153. Catholic Themes in Literature

Using novels and other literature either written by Catholics or using Catholic themes, through extensive reading, the writing of reflective essays, and class discussion, students investigate the uniquely Catholic vision.

154. Theology in the Daily News

An examination of religious and theological dimensions of contemporary culture.

155. Catholic Social Teaching

Explores the evolution of Christian social thought as it has developed and expanded throughout the Church's history. Special emphasis on the Church's relationship to the world since Vatican II. Critical analysis of recent pastoral letters.

157. Ethics in the Health Professions

Introduction to the major issues in biomedical ethics. Basic principles of biomedical ethics, genetic interventions and reproductive technologies, euthanasia, professional responsibilities, confidentiality, and public policy issues regarding the system of delivery of health care. (Also listed as Philosophy 110.)

159. Ethics and Warfare

A study of historical and contemporary approaches to the ethical issues that arise in the conduct of war. Examines the history of the development of Christian thought on war, as well as contemporary philosophical approaches, and evaluates the application of the thought to modern technological war. A portion of the course addresses the historical and contemporary value of Christian pacifism. (Also listed as Philosophy 118.)

160. American Religious Ethics

A distinctive American religious approach has been described as experiential, pragmatic, affective, and socially transformative. Course examines this issue from the Puritans to today through major texts, emphasizing the moral dimension of American religion.

161. Environmental Ethics

An introduction to the exciting field of environmental ethics. Considers the theological and philosophical principles underlying contemporary ecological attitudes. Explores issues such as the rights of nonhuman animals, mass extinction of species, corporate responsibility, the ethics of human population control, and the moral dimensions of global ecological dilemmas. Students will develop an integrated theological understanding of human life on earth that can serve as a foundation for survival into the indefinite future.

163. Christianity and Politics

A historical investigation into changing patterns of relationship between Christianity and the political order. Emphasis on the foundational events of the biblical era, the early Christian era, and on Christianity's experience of secular modernity in the United States. Readings drawn from both documentary sources and contemporary discussions.

165. Contemporary Spirituality: Men and Women for Others

Examination of the central aspects of Ignatian spirituality with particular attention to the spiritual exercises of St. Ignatius of Loyola and the Ignatian method of discernment and Christian decision making. Evaluation of the effectiveness of a 16th-century spirituality finding fresh expression today by comparison with other contemporary spiritualities (e.g., liturgical, JVC, Twelve Step, etc.).

166. Faith in the Shape of Story

Examines the earliest expressions of Christian spirituality in England. Draws on the rich historical setting of Durham, England. Examines the faith stories of the Durham Cathedral, St. Cuthbert, St. Godric, Venerable Bede, Ste. Hilda of Whitby, St. Thomas Becket, St. Thomas More, and Julian of Norwich to see what wisdom they can offer contemporary Christians. Offered through Durham summer program.

168. Zen Buddhism

History and theory of Zen Buddhism. Some practice of Zen meditation.

169. Jesuit Perspectives

Overview of the Jesuits, their origin and history, their view of education, their ethical and spiritual world view.

198. Practicum

199. Directed Readings and Research

For religious studies majors only.

Area III: Religion and Society (RSOC)

Note: Introductory courses are 1–19; intermediate, 20–99; advanced, 100–199.

8. Christianity in Society

Provides a historical introduction to the Christian tradition with an emphasis on Christianity in its cultural and social contexts.

9. Ways of Understanding Religions

Introduces the ways in which religion is widely understood and formally studied. Explores distinct *perspectives* or ways of thinking about religion (e.g., psychological, phenomenological, anthropological, theological, and sociological); also considers a variety of religious *data* (e.g., symbols, myths, rituals, theologies, and modern communities) by drawing on a number of religious traditions (Christianity, Islam, Judaism, African, etc.).

10. Introduction to Asian Traditions

Addressing Hinduism, Buddhism, Confucianism, and Japanese Zen, focuses on four different religious issues and how each of these Asian traditions has defined both problem and answer: the nature of the divine, human effort versus faith and devotion, social ethics versus inner mystical experience, and the impact of religion on culture and (vice versa). Readings include basic scriptures in each tradition.

13. Religion and Modernity

An introduction to the study of religion; focus on the interaction between religious traditions (primarily Christianity) and various facets of the modern West. Some sections of this course are reserved for students in the Freshman Residential Program.

61. Religion of Oral Peoples

Examines the religious cultures of four oral (nonwriting) peoples: Native North Americans, Native South Americans, Native Africans, and Native Australians. Studies importance of representative myths, rituals, and systems.

65. Early Christianity

A selective survey of the history of the Christian church from its beginnings to the fifth century—a time of massive transformation. Explores the significance of that change. Topics include authority and discipline in the church, dissent and orthodoxy, patterns of religious life, and the church's interaction with the political order and with the cultural life of the Roman Empire. Lectures plus readings in primary sources.

66. Medieval Christianity

The Christian tradition after Augustine and before Luther. Topics include the split between Byzantine East and Latin West, reform movements, structures of authority, modes of dissent, relations with the political order, and forms of piety and religious life.

70. Women in the Biblical Traditions‡

An examination of attitudes toward women and roles of women in Christianity and Judaism; perspectives on gender in religion, family, and social structure; the contemporary feminist challenge to Judaism and Christianity; debates over sexuality and women's ordination.

‡ Course included in Women's Studies Program

72. U.S. Catholicism

A historical examination of the Catholic experience in the United States. Includes the encounter with U.S. pluralism, the impact of immigration, relations with Rome, church-state relations, the development of new structures in Catholic life, and the direction of U.S. Catholicism after Vatican II.

73. New American Religions

Describes and analyzes the broad spectrum of distinctively American forms of religion—Protestant offshoots, New Thought/New Age, spiritualist, Eastern/Asian, and Neo-Paganism. Historical context and trends in the U.S. presented. Includes such groups as Seventh-day Adventists, Rosicrucianism, Goddess religion, the Hare Krishna movement, and study of phenomena such as millenarianism, holism, shamanism, and cults.

75. American Judaism

Surveys the various options and constructions of religious identity and community in American Judaism over the past 150 years. Focuses on 20th-century American Jewish religious thought and how these Jewish thinkers understand the tension between their "tradition" and the acceptance and/or rejection of American public life. Considers methodological approaches to the study of religion and how such interpretations help to understand American Judaism.

76. Judaism and Holocaust

Explores religious dilemmas faced by modern Jews after Auschwitz. Course is interdisciplinary in design, drawing upon personal narratives, literature, theology, and film.

77. History of Jewish/Christian Relations

Explores the parallel paths that both Jewish and Christian communities have taken toward theologies of self-identity, which have unavoidably intersected throughout history.

78. History of the African American Church

The African roots of African American religious practices traced to observe their confluence with Euro-Christian religious structures during slavery as they gave rise to the distinctive phenomenon known as the African American church.

80. The Protestant Tradition

Origins and development of Protestant thought and Protestant ecclesiastical institutions. Special attention to U.S. Protestant Christianity and its impact on U.S. political and social life.

83. Faith and Politics in the Middle East

Considers the relationship between religion and politics in the Middle East, historically as well as in the modern world. Focuses on the major religious traditions of Islam, Christianity, and Judaism. Topics include nationalism, revolution, the papacy in the Middle East, and religious tolerance.

85. Hinduism

Exploration of the historical development, theologies, symbols, rituals, scriptures, social institutions, and 20th-century politics of Hinduism, primarily in India. Main focus on the interaction of religion and culture.

86. Buddhism

Exploration of the whole Buddhist tradition, including Indian origins, Theravada traditions of Southeast Asia, and Mahayana traditions of Central and East Asia. Emphasis on cultural impact of religion, Buddhist philosophy, assimilation of Buddhist practice, and modern forms of tradition.

88. Chinese Religions

Focuses on the historical development of Chinese religions—Confucianism, Taoism, Buddhism—their philosophies as well as the interface between folk reli-

gion, society, and political institutions in traditional and modern China.

89. Japanese Religions

Focuses on the historical development, doctrines, institutions, aesthetics, and literature of the religious traditions in Japan—Shinto, Buddhism, folk, and new religions. Special attention to Zen Buddhism and modern Shinto.

91. Native American Religions§

Exploration of the religious belief systems, rituals, and institutions of the indigenous peoples of North America by geographic region and types of religious systems. Special focus on contemporary community issues of religious identity, stereotyping, Pan-Indian movements, and social change.

95x. Ancient Greek Religion

Consideration of the differing attitudes and expectations of polytheisms and monotheisms and of religious expression in the context of classical Greek cult and ritual. Readings drawn from a wide variety of literary, historical, philosophical, and epigraphical texts. (Also listed as Classics 67 and History 16.)

96x. Ancient Roman Religion

Examination of religious practices, institutions, and beliefs of the ancient Romans. Special consideration of interconnections in Roman religiosity between the acts/beliefs of individuals and the concerns of the state. Concludes with philosophic mysticism, magic, mystery religions, and Christianity. (Also listed as Classics 68 and History 17.)

97x. Religion, Ritual, and Politics

Examination through case studies of the uses of religion and ritual in politics in legitimizing the status quo, in political competition, and in organizing passive and active political resistance. How and why religion and ritual are used in political activity such as black history, the revolution in Iran, sexual politics, Communist and Catholic parties in Italy. Possible reasons behind the current religious resurgence in the United States and elsewhere. (Also listed as Anthropology 51.)

98x. Anthropology of Religion

Relation of religion to culture, personality, and social organization. Theories on the functioning of myth, ritual, and symbolism. Religious leaders, interpretations of death and afterlife, traditional curing, and religious movements and cults. (Also listed as Anthropology 56.)

152x. State, Religion, and Gender in Medieval and Premodern India

India after the arrival of Islam with a focus on Hindu and Muslim models of kingship and state; the relevance of temples, mosques, and mausoleums to political power; the development of Hindu bhakti theism; Islam in India; Indian Sufism; Sikhism and sociocultural syncretisms and conflicts, gender roles in Hindu-Muslim societies. (Also listed as History 154B.)

167. Late Medieval Religion

Christian religious culture from the feudal age to the Reformation. The influence of the new urban society on religious observance, the rise of the papacy, the Mendicants, struggles with nation states, the Great Schism, conciliarism, movements for reform.

170x. Ancient and Classical India

Early India from its prehistoric roots to about A.D. 1000 with a focus on these sacred and secular themes: Hindu, Buddhist, and Jain religious and philosophical texts, beliefs, practices, and development; social stratification through caste (varna-jati system), gender, and ethnicity; kingship and state; rural-urban economies; trade and cultural expansion; literature, religious art. (Also listed as History 154A.)

§ Course included in Ethnic Studies Program

172. Science and Religion: Creative Tension

Polarized views regarding creation and evolution lead to a persistent misconception that religion and the natural sciences have always stood in opposition. Course attempts to dispel that myth and to construct a more sophisticated view of the relationship between Western religious thought and the traditions of rationalist philosophy and empirical scientific investigation.

174x. State and Church in the Middle Ages, 1000–1450

The struggles between state and church that formed modern Western political and ecclesiastical institutions; the rise of royal and papal theocracy; the emergence of limited government; the foundation of representative institutions and modern legal institutions; the origins of the modern state and the modern papacy. (Also listed as History 117.)

175x. The English Reformation

Using a historical approach, course focuses on the major religious shift that occurred in England during the 16th and early 17th centuries. Assesses both the nature of this radical transformation and its religious, political, social, and institutional consequences. (Also listed as History 121 and with Catholic Studies.)

176. Religion in America

Provides historical and in-depth coverage of selected themes in the modern U.S. religious landscape, surveying themes and institutions in U.S. religion past and present and tracing the development of U.S. religion from the early 17th century to the post–World War II era.

177. Philosophy of Religion

Deals with some basic issues in philosophy of religion: Can God's existence be proved? Has science shown that God is an unnecessary hypothesis? Does religious experience show that there must be a God? If God is utterly different from us, can we talk about Him at all? If, on the other hand, God is quite like us, why should God be worshiped? Are there things that God could not know, or things that God could not do? Is the world too bad to have been produced by a good God? Predestination, fatalism, the history of the universe, and theories of possible worlds. These and many other issues will be touched upon.

179. Magic, Science, and Religion

An introduction to the primary texts in the study of religion as a social and cultural phenomenon—Durkheim, Weber, Eliade, etc. Attempts to "de-mystify" the social study of religion, that is, to demonstrate on the one hand the historicity of the ways in which "religion" has been identified, compared, and envisioned and on the other to introduce students to the issues that are affecting how intellectuals, pundits, and policy makers talk about religion.

180. Religion in the Theories of Freud and Jung

Examines religion in the theories of Sigmund Freud and Carl Jung. Focuses on the interpretation of religious belief and practice from the perspective of depth psychology, on theological responses to the thought of Freud and Jung, and on the impact of psychoanalysis on contemporary culture.

181s. England and the Holy Land

Explores the relation between England and the Holy Land in terms of religious imagination, the translating of the English Bible, and archaeological pioneers to the Middle East. Offered through Durham summer program.

182. Law and Justice in the Middle East

The legal system and social ethics of ancient Israel with special emphasis on the concern for social justice in the prophetic literature of the Hebrew Bible. Explores early rabbinic law. Emphasis on social justice themes in Third World liberation theology.

183. Comparative Fundamentalisms and Religious Resurgence

Explores the roots of recent "fundamentalist" movements within several religious traditions—primarily U.S. Protestantism, Judaism, Islam, and Hinduism. Within the context of the historical variety of traditional approaches to myth and scripture, examines similarities and differences in how fundamentalist approaches to the "holy book" define authority, form community, foster nationalism, and resist secularism.

184. Race and Religion in the United States§

The methodological principle that governs this course follows from the conviction that religious life involves the critical tension of "message" and "situation." This principle can be formulated as follows: The life of faith involves the mutually critical correlation of the fundamental message of a religious tradition and the situation in which its adherents live. Course begins with an examination of the living situation of black people in the United States. It consists of a review of the history of people of African descent in the United States as well as an analysis of their social context—particular attention will be given to the economic, educational, and political aspects. Only after some construal of the situation of the black community will considerations be given to the effects which the Christian message has had in this situation. Fulfills the Ethnic Studies and Women's Studies requirement.

185. Gender and Religion in Asia‡

The participation of women in religion (Hinduism, Islam, and East Asia) as shaped by notions of female purity and pollution. The role of such beliefs within religious communities. Marriage, sexual segregation, menstruation, motherhood, monasticism, and shamanism.

187. Ethical Issues in Asian Culture

Grapples with the variety of ethical norms rooted in different religious traditions and cultures; questions how religious cultures shape ethical concerns and perspectives; and discusses the problems of talking about (and deciding) ethical issues cross culturally, including cultural relativism versus ethical universalism. Readings address war, abortion, wealth, and human rights in Hinduism, Buddhism, and Confucianism.

188x. Origins and Development of Islam

Prophethood of Muhammad and the Muslim revolution. Islamic conquests and formation of Muslim institutions. Development of philosophy, law, and art during the "golden age" of Islam. Fragmentation of the Muslim empire; the rise of Turkish power; the Crusades. (Also listed as History 143.)

189x. Religion in Culture and Society

Cross-cultural examination of religions in a range of human societies. Emphasis on religious pluralism, religious movements, and secularism in the contemporary world. (Also listed as Anthropology 150.)

190. Islam and the Modern World

Comparative study of contemporary Islam. Beginning with the study of origins and basic doctrines of Islam, course examines its development in the modern world. Focuses on Islam's interaction with different cultures, emphasizing political implications of rise of revivalism.

191x. Islam in the Middle East

An examination of the variety of religious experiences, activities, and interpretations among Muslims and of the place of Islam in current social and political life, such as community organization, local-level politics, governments and political resistance, women's roles, and contact with the West. Discussion of the underlying reasons behind the recent resurgence of Islam and its effects on Muslim societies. (Also listed as Anthropology 154.)

§ Course included in Ethnic Studies Program ‡ Course included in Women's Studies Program

192. Mysticism

Examines the nature and development of spiritual consciousness. Uses classic texts, film, and "practical" exercises. Explores the paradoxical nature of mysticism by focusing on how and why it challenges the "normal" categories that perceive and interpret reality. Surveys some of mysticism's principal types and discusses its multidisciplinary structure (philosophical, theological, psychological).

194x. History of the Jesuits, 1491–1992

An interdisciplinary examination of the evolution of the Society of Jesus from its founding at the close of the Middle Ages to the present. An exploration of how the order has been, and continues to be, constantly shaped and molded by external secular and ecclesiastical influences. (Also listed as History 103.)

196. State and Church in Latin America

Considers the role of Christianity in Latin America: the conquest and pacification, church-state conflicts, contrast among present-day nations, and the effects of traditional and liberation theologies.

198. Practicum

199. Directed Readings and Research

For religious studies majors only.

DEPARTMENT OF THEATRE AND DANCE

Associate Professors: Jagienka A. Drweski, Jerald R. Enos, CSC *(Director, Center of Performing Arts)*, Barbara Fraser, Barbara A. Murray *(Chair)*, Frederick P. Tollini, S.J.
Senior Lecturer: David Popalisky
Lecturers: Derek Duarte, Carolyn Silberman, David Sword
Adjunct Lecturer: Libby Dale

The Department of Theatre and Dance offers a well-rounded liberal education leading to a Bachelor of Arts degree. The department also produces several theatre and dance presentations each quarter of the academic year in the Louis B. Mayer and the Fess Parker Studio theatres.

Theatre and Dance are distinct but related areas of emphasis. Students in either emphasis share common courses. Students within the theatre emphasis may focus their study on acting, technical theatre, or drama. Majors must fulfill the University Core Curriculum and College requirements and the department requirements in their emphasis areas.

The Theatre Program offers coordinated courses in acting, design, technical production, dramatic literature, and theatre history. The Dance Program stresses modern dance and choreography, with basic training in jazz and ballet. In both areas, students have many opportunities for performance and production; majors have the option of a senior recital, directing, or design projects.

Students in the Theatre and Dance Department are encouraged to consider a minor in a related field of study, such as art, communication, English, or psychology.

REQUIREMENTS FOR MAJOR IN THEATRE ARTS

Lower Division (26 units)

Theatre Emphasis

Performance and Culture I, II, III (11, 12, 13)
Beginning Acting I (20)
Introduction to Production (30)
Basic Costume Construction (31) or Basic Stage Lighting (32)
Modern Dance I (46)

Dance Emphasis

Performance and Culture I (11)
Performance and Culture II or III (12 or 13)
Beginning Acting I (20)
Modern Dance I, II, and III (46, 47, and 48)
Introduction to Production (30)
Dance Composition (49)
Ballet I (43) or Jazz I (40)

Upper Division (40 units)

Theatre Emphasis

Dramaturgy (185)
One course in Drama and Theatre up to 1700 (110, 111, 112, 186, 187)
One course in Drama and Theatre After 1700 (113, 114, 119, 188, 189)
One Shakespeare course (116, 117, 118)
Four electives in area of emphasis

Dance Emphasis

Advanced Modern Dance I, II, and III (146, 147, and 148)
Choreography (143)
Theatre or Dance History Seminar (187 or 189)
Three theatre and dance electives

REQUIREMENTS FOR MINOR IN THEATRE OR DANCE

Lower Division (16 units)

Theatre

Introduction to Theatre (10)
Beginning Acting I (20) or Basic Acting for Nonmajors (24)
Introduction to Production (30)
One theatre and dance elective

Dance

Introduction to Theatre (10)
Modern Dance I, II, and III (46, 47, and 48)
4 units of ballet or jazz
Dance Composition (49)

Upper Division (20 units)

Theatre

Four theatre and dance courses

Dance

Advanced Modern Dance I and II (146 and 147)
Choreography
One theatre and dance elective

THEATRE PRODUCTION PROGRAM

The theatre season usually includes at least four faculty-directed plays, three dance concerts, and student-directed plays and recitals. Participation in departmental productions is open to all members of the University community: students, faculty, and staff. Guest productions by professional dance and theatre companies regularly form part of the season; and guest artists periodically direct, design, or perform in shows with Santa Clara students.

LOWER-DIVISION COURSES

10. Introduction to Theatre Arts

Creating a show: basic performance and production skills leading to theatrical presentation. Recommended for fulfilling Fine Arts requirement for nonmajors.

11., 12., 13. Performance and Culture I, II, and III

See Chapter 9, Center of Performing Arts.

20. Beginning Acting I

First acting course for majors and minors in Theatre and Dance. Improvisation and theatre games. Role playing; sensitizing of physical and mental tools. Analysis of skills and problems of individual students.

21. Beginning Acting II

Continuation of 20. Emphasis on scene and monologue study and script analysis. *Prerequisite: Theatre 20.*

22. Voice and Diction

Concentrates on standard American speech, as well as proper vocal care and technique for the stage. Use of the international phonetic alphabet and work on accents and dialects.

23. Chicano Theatre§

Study of performance of the "acto," Hispanic American theatre's basic form of theatrical expression.

24. Basic Acting for Nonmajors

Basic principles of role playing for those with an interest in the acting process. Recommended for fulfillment of Fine Arts requirement.

§ Course included in Ethnic Studies Program

25. Drama Workshop

Study and performance of scenes from plays. Application of principles and methods taught in basic acting courses. Recommended for majors and nonmajors. *Prerequisite: Theatre 21 or 24 or permission of instructor.* (2 units)

26. Summer Theatre

Performance or technical work in six-week summer program and run of production for Theatre Santa Clara Summerfest. (1–10 units)

27. Children's Theatre Production

The development and production of traditional and bilingual theatre for children. Focus is on ethnic folk tales and social justice issues. (2 quarters/2 units each)

29. Rehearsal and Performance

Active participation in the preparation and performance of departmental productions as actors, assistant stage managers, assistants to the director, dancers and choreographers. Individual design/technical assignments. *Prerequisite: approval of director of production.* May be repeated for a total of 8 units. (2 units)

30. Introduction to Production

Overview of the organization, concepts, terminology, and skills involved in technical theatre.

31. Basic Costume Construction

Introduction to making costumes: pattern drafting, sewing techniques, fabric studies.

32. Basic Stage Lighting

Principles and practice. Color, instrumentation, basic electricity, and electronics. Elementary design theory and practice.

36. Makeup for Stage

Basic principles of makeup for the stage. Youth, old-age, and special problems. Use of all media. (2 units)

39. Production Workshop

Training in development of technical skills for stage production. Directed work in scenery and costume construction, lighting, and sound. May be repeated for a total of 8 units. Not applicable to paid work hours or to laboratory hours connected with stagecraft courses. (2 units)

40. Basic Jazz Dance I

Introduction to body isolations, rhythmic awareness, movement coordination, jazz styles through performance of dance combinations. (2 units)

41. Basic Jazz Dance II

Continuation of fundamentals in Jazz Dance I with emphasis on learning and retaining longer combinations. (2 units)

42. Basic Jazz Dance III

Immediate study of jazz dance with emphasis on technique, flexibility, balance, control, muscle tone, and retaining long combinations in a variety of jazz styles. Students choreograph final projects. (2 units)

43. Basic Ballet I

Introduces ballet form by developing individual strength, flexibility, and coordination through classical ballet technique. Includes barre and floor combinations. (2 units)

44. Basic Ballet II

Continuation of Ballet I with emphasis on discipline, coordination, and developing practical performing skills in classical ballet technique. Includes barre and floor combinations. (2 units)

45. Basic Ballet III

Continued study of ballet at intermediate level, encouraging technical and performing proficiency. Focus on the Cecchetti style of classical ballet. Includes barre exercises and intermediate-level floor combinations. (2 units)

46. Modern Dance I

Introduces the expressive potential of dance through modern dance technique. Emphasis on flexibility, strength, and alignment practiced through standing and floor exercises. Movement improvisation explores qualities of motion. (2 units)

47. Modern Dance II

A continuation of modern dance fundamentals with emphasis on technique, flexibility, coordination, and creativity. (2 units)

48. Modern Dance III

Continued study of modern dance at an intermediate level. Emphasis on release techniques, rhythmic precision, and spatial principles through extended combinations and movement improvisation. (2 units)

49. Basic Dance Composition

Traditional approaches to compositional problems of form and design, time and rhythm, energy flow and force in dance as art form. (2 units)

51. Intermediate Acting I

Characterization: principles and techniques of role portrayal in realistic drama. *Prerequisite: Theatre 21 or equivalent.*

52. Intermediate Acting II

Role development: detailed study of creative method in developing complete roles in realist and naturalist plays. *Prerequisite: Theatre 51 or equivalent.*

60. Dance Improvisation

Performance development based on natural body movement, breathing, rhythm, movement qualities, and audio and spatial composition. (2 units)

63. Biblical Drama

Scriptural material explored through dramatic techniques.

68. Techniques of Musical Auditions

See Music 36.

70. Graphics and Design Principles

Introduction to graphic representation. Drafting, mechanical perspective, freehand drawing, isometrics, white model development, painter's elevation, rendering, portfolio presentation.

72. Stage Management

Techniques and responsibilities of the backstage administrator. Analysis of preproduction, audition, rehearsal, and performance duties. Methods for controlling personnel, paperwork, and equipment. (2 units)

81. British Comic Drama

Introduction to three centuries of English stage comedy. Forms and interests; literature and spectacle.

UPPER-DIVISION COURSES

110. Classical Tragedy

See Classics 181.

111. Classical Comedy

See Classics 182.

112. World Drama I: Middle Ages Through English Restoration

Non-Shakespearean drama in England to 1660. Authors may include the Wakefield Master, Marlowe, Ford, Webster, and Jonson. (Also listed as English 113.)

113. World Drama II: Enlightenment and Romanticism

Drama in England since the Restoration. Dryden, Wycherley, Congreve, Sheridan, Shaw, Eliot, and selected contemporary playwrights. (Also listed as English 114.)

114. World Drama III: Modern and Contemporary

Continental drama from Ibsen to the present in translation. Offered in alternate years. (Also listed as English 112.)

116. Shakespeare's Tragedies

See English 116.

117. Shakespeare's Comedies

See English 117.

118. Shakespeare's Histories

See English 118.

119. American Drama

Drama in the United States from 1787 to the present. Emphasis on the modern period. (Also listed as English 119.)

120. Acting Styles I: Classical Tragedy

Lecture, demonstration, and practice in acting ancient Greek tragedy. Offered in alternate years. *Prerequisite: Theatre 51.*

121. Acting Styles II: Comedy

Focus on Commedia dell'Arte, Moliere, Restoration period Comedy of Manners. Offered in alternate years. *Prerequisite: Theatre 51 or equivalent.*

122. Acting Styles III: Shakespeare

Techniques for performance of Shakespearean and Elizabethan drama. Offered in alternate years. *Prerequisite: Theatre 51 or equivalent.*

123. Modern Acting

Ensemble work; skills developed through experimental and absurdist drama. *Prerequisite: Theatre 51 or equivalent.*

124. Acting Styles IV: Musical Theatre

Focus on the techniques and skills of the acting interpretation of the lyrics and songs of musical numbers from musicals, cabarets, and other forms of musical theatre.

125. Drama Workshop

See Theatre 25. (2 units)

126. Summer Theatre

See Theatre 26. (1–10 units)

127. Children's Theatre Production

See Theatre 27.

129. Rehearsal and Performance

See Theatre 29. (2 units)

130. Technical Design

The design process: adapting scenic elevations to building scenery. Transformation of scene designs to carpenter drawings; standard building methods, stage machinery solutions, and budget-regulated design options. Offered in alternate years.

131. Sound Design

Principles of sound in theatre production. Emphasis on practical applications and equipment use; digital and automation sound theories.Offered in alternate years. *Prerequisite: Theatre 30 or equivalent.*

132. Lighting Design

Application of lighting skills to production design.Offered in alternate years. *Prerequisite: Theatre 32 or equivalent.*

133. Scene Design

Application of graphic skills to scenic design. Styles, scene painting technique, set decor. Offered in alternate years. *Prerequisite: Theatre 70 or equivalent.*

134. Costume Design

Principles of costume design for the stage. Fabrics and special materials. Rendering. Offered in alternate years.

135. Graphics Design

Layout, illustration, composition of advertising, media, and poster and program design as applied to the performing arts.

136. Advanced Makeup for Stage

Continuation of Theatre 36. Includes in-depth character study and makeup design, stylization studies, ventilation, and prosthetics.

137. Pattern Drafting and Draping

Drafting and draping techniques for a basic bodice, skirt, sleeve, and collars and techniques for developing variations. Emphasis on drafting period garments. Offered in alternate years. *Prerequisite: Theatre 31 or permission of instructor.*

138. Scene Painting

Techniques of painting for the stage. Psychology of color and practical application of paint as employed in all areas of scenic and costume design. Offered in alternate years.

139. Production Workshop

See Theatre 39.

140. Advanced Ballet I

Advanced-level study of classical ballet with focus on the Cecchetti style. Includes barre exercises, adagio and allegro combinations at intermediate/advanced level. *Prerequisite: permission of instructor.*

141. Advanced Ballet II

Continuation of Advanced Ballet I. *Prerequisite: permission of instructor.*

142. Advanced Jazz Dance

Builds from an assumed intermediate level of jazz dance technique. Emphasis on personal style and performance techniques in advanced jazz dance combinations. *Prerequisite: permission of instructor.*

143. Choreography

Emphasis on the creative process, dynamics, phrasing, and thematic development through choreographing and performing an original group dance. Exploration of aesthetic and stylistic approaches to choreography. *Prerequisite: Dance 49 or equivalent.*

146. Advanced Modern Dance I

Intermediate/advanced level study of modern dance technique. Emphasis on release principles, breath control, phrasing, clarity of line, and movement qualities. Improvisation and extended combinations develop performance commitment. *Prerequisite: permission of instructor.*

147. Advanced Modern Dance II

Continuation of Advanced Modern Dance I. Emphasis, through improvisation and combinations, on the temporal component of dance: rhythm, tempo, time signatures, and polyrhythms. *Prerequisite: permission of instructor.*

148. Advanced Modern Dance III

Continuation of Advanced Modern Dance I and II. Focus on modern dance styles: lyrical, classical, eclectic, and pedestrian. Emphasis on developing a clear, personal performance style and movement analysis skills. *Prerequisite: permission of instructor.*

150. Social History of Fashion I

Study of the influence of social background on structure, style, and the use of clothing in the Western world from ancient times to the 17th century. Offered in alternate years.

151. Social History of Fashion II

Study of the influence of social background on structure, style, and use of clothing in the Western world from the 18th century to the present. Offered in alternate years.

160. Literature and Performance

Adapting literature (poems, novels, short stories, diaries, etc.) for the stage. Theories of both narrative and dramatic structures. Writing complete scripts for performance and production. (Also listed as English 160.)

161. American Theatre From the Black Perspective

Survey of the literature in the genre with an emphasis on the works of black playwrights in the United States from 1940 to the present. Focuses on expression of sociological, economic, educational, religious, and psychological forces that are contained in the rich and varied literature of black theatre.

162. African American Dance History

See Chapter 9, Center of Performing Arts.

163. Multicultural Theatre§

Designed to provide a working vocabulary of issues in contemporary American theatre in relation to various ethnic and social issues and controversies such as nontraditional casting. Recent articles from *American Theatre* magazine as well as plays from African American, Chicano, Asian American, Gay and Lesbian theatre discussed. Outside theatre productions attended.

164. History of American Musical Theatre

An in-depth look at musical theatre as an American art form, which has its roots in vaudeville, burlesque, and minstrel shows. (Also listed as Music 164.)

171. Play Writing

Critical analysis of dramatic structure for the playwright. Scenarios, character studies, writing of original plays. Offered in alternate years. (Also listed as English 170.)

172. Theory of Stage Directing

Basic course in the problems, techniques, and theory of directing plays for the live theatre. *Prerequisites: Theatre 20 or 24 and 185.*

173. Stage Directing Practice

Project in directing. A short play, fully staged. Laboratory fee. *Prerequisites: Theatre 172 and permission of instructor.*

174. Senior Recital

A performance for theatre majors showcasing their performance abilities developed in acting and/or dance. Laboratory fee.

180. Musical Theatre Production Workshop

Gives students the opportunity to perform in a musical theatre production workshop that will cover the study of songs and scenes from a wide variety of musicals. (Also listed as Music 180.)

185. Dramaturgy

Special topics in dramatic theory and criticism. Can be repeated for credit as topic varies. (See English 185.)

186. Special Topics in Drama up to 1700

Special topics in dramatic literature. Can be repeated for credit as topic varies. (Also listed as English 186.)

187. Seminar in Theatre or Dance up to 1700

Special topics in the history of theatre and dance performance. Can be repeated for credit as topic varies.

188. Special Topics in Drama After 1700

Special topics in dramatic literature. Can be repeated for credit as topic varies. (Also listed as English 186.)

189. Seminar in Theatre or Dance After 1700

Special topics in the history of theatre and dance performance. Can be repeated for credit as topic varies.

190. Theatre Administration

Functions and techniques of the producer/artistic director, production manager, business manager, house manager, stage manager, treasurer, and publicist. Offered in alternate years.

§ Course included in Ethnic Studies Program

191. Seminar in Arts Administration

Multidisciplinary studies (art, music, theatre) in problems of arts administration.

198. Practicum

Reserved for projects with recognized institutions outside the University. *Prerequisite: Written proposal must be approved by instructor and department chair one week prior to registration.*

199. Recital/Creative Projects/ Directed Reading/Directed Research

Two areas of directed study: creative projects in directing, choreography, technical production, design, play writing, administration; or directed reading and/or research. *Prerequisite: Written proposal must be approved by the instructor and department chair one week prior to registration.*

6

Leavey School of Business and Administration

The Leavey School of Business and Administration offers a professional education emphasizing humanistic and moral development as well as technical proficiency. Graduates of the Leavey School are expected to have a solid understanding of the ethical and global issues confronting business; knowledge of the political, social, and economic environment; and an awareness of the impact of a demographically diverse workforce on organizations.

The Leavey School of Business and Administration confers the degrees of Bachelor of Science in Commerce in Accounting, Economics, Finance, Marketing, Operations & Management Information Systems, and Organizational Analysis and Management. A minor in general business is also available.

REQUIRED BACKGROUND

In addition to the recommended high school courses for students applying for admission to the University as freshmen, applicants to the Leavey School must be computer proficient, including knowledge of word-processing and spreadsheet software (e.g., Lotus, Quattro-Pro, Excel). This level of computer proficiency must be achieved prior to the sophomore year and can be obtained by taking remedial courses at Santa Clara University or community colleges and/or by using spreadsheet tutorials.

All students are required to subscribe to *The Wall Street Journal* at the beginning of their sophomore year. This requirement will gradually expand the student's knowledge of the current business environment and will also help improve communication skills.

REQUIREMENTS FOR DEGREE: BACHELOR OF SCIENCE IN COMMERCE

The program of study for the degree of Bachelor of Science in Commerce consists of 175 quarter units and includes courses that fulfill the goals of the University Core Curriculum, Leavey School of Business and Administration curriculum, and respective departmental major curriculums. *Note:* Students may count courses as fulfilling more than one requirement if the courses have been approved as meeting the goals, outcomes, and criteria of more than one requirement.

For the Bachelor of Science degree, students must fulfill the following University and Leavey School requirements:

English Composition; Third Writing

Four courses: (a) two courses in composition and rhetoric, normally English 1 and 2; (b) one course emphasizing writing from the list of approved courses; and (c) English 129B (Writing for Business) taken during the junior year. The latter must be completed with a grade of C (2.00 GPA) or higher.

Western Culture

Two courses in one of the following sequences: (a) English 11, 12, and 13; (b) History 11, 12, and 13; (c) Philosophy 11, 12, and 13; (d) Art History 11, 12, and 13; or (e) Performance and Culture 11, 12, and 13. The two Western Culture courses should normally include the modern segment (i.e., course 13).

Second Language

Successful completion of the second course of the first-year sequence in a single classical or modern language. Students who have successfully completed the third year of study in a single classical or modern foreign language during high school or who demonstrate an equivalent level of proficiency by passing a language-proficiency examination are exempt from the requirement.

Social Sciences

Three courses: Economics 1 (Principles of Macroeconomics I); Economics 2 and 14 (Principles of Microeconomics I and II). Normally, the three courses will be taken in sequence during the first two years. Economics 14, however, may be taken during the junior year.

Mathematics and Natural Sciences

Two courses: Mathematics 30 and 31 (Calculus for Business I and II) or Mathematics 11 and 12 (Calculus and Analytic Geometry I and II). One additional course in natural science.

Ethics

One course: Philosophy 6 (Ethical Issues in Business)

World Cultures/Societies

One course: Business Administration 80 (Introduction to International Business), normally completed during the lower division. An additional course from the approved list of area studies/regional courses.

Religious Studies

Three religious studies courses: (a) two courses normally taken during the freshman and sophomore years—one introductory level and one intermediate level; and (b) one advanced-level course taken after completing 88 quarter units

Accounting

Three courses: Accounting 1 (Introduction to Accounting); Accounting 2 (Financial Accounting); and Accounting 3 (Managerial Accounting)

Data Analysis

Two courses: Business Administration 40 and 41 (Statistics and Data Analysis I and II). Normally, these classes should be taken in sequence and during the sophomore year. Business Administration 41, however, may be completed during the junior year. A working knowledge of a spreadsheet program is a prerequisite for these courses.

Information Systems

One course selected from the following: Computer Engineering 4, 22; Mathematics 10, 164; Operations & Management Information Systems 30, 31, 34, 110; Accounting 134. The student's preparation and interests will determine the actual course selected. Students with limited computing experience should enroll in Operations & Management Information Systems 34 or Accounting 134. More advanced students may choose one of the other courses listed.

Technology

This requirement is fulfilled by the combination of Data Analysis and Information Systems requirements in the School of Business.

Environment of Business in the United States

One course selected from the following: Economics 126 (Economics and the Law); History 177 (American Capitalism); Management 169 (Business and Public Policy); Sociology 149 (Business, Technology, and Society); Economics 136 (20th-Century Economic History)

Students must complete the balance of the 175 quarter units required for graduation during their junior and senior years. In addition to an advanced-level religious studies course, these courses must contain a minimum of 12 upper-division courses (60 units) and include the following:

1. Five courses that provide a common core of knowledge
   a. Either Management 160 (Organization and Management) or Management 161 (Organizational Structure and Design)
   b. Marketing 181 (Principles of Marketing)

c. Finance 121 (Financial Management)
d. Operations & Management Information Systems 108 (Production Management)
e. Business Administration 162 (Capstone Course), taken during the senior year. (The Capstone Course must be completed with a grade of C [2.00 GPA] or higher.)

2. A minimum of five courses in one department

Students must also fulfill the course requirements for a major. Consult individual department sections for course requirements in the Departments of Accounting, Operations & Management Information Systems, Economics, Finance, Marketing, and Organizational Analysis and Management.

At least 50 percent of the required 175 quarter units for the degree must be in nonbusiness courses (88 quarter units). Depending on the requirements for a departmental major, students will have a number of elective courses.

The University also offers two programs of special interest to students: the international business minor, open to students in the Leavey School of Business and Administration and the College of Arts and Sciences; and the retail studies minor, open to all students. See the Other Programs section (Pages 261, 285–86) for further information.

REQUIRED BUSINESS ADMINISTRATION COURSES

40, 41. Statistics and Data Analysis I and II

Two-course introduction to statistical theory and data analysis for business and economics. Topics include using personal computers to explore and summarize information; using probability and estimation to overcome the limits of intuition; forming and evaluating testable hypotheses; using regression analysis to measure and test statistical relationships; and learning to evaluate empirical claims made in business, the media, and research. Emphasis on active learning and the analysis of real-world data using popular statistical software. The value and the limits of statistical techniques. *Prerequisites: Math 12 or 31 and working knowledge of a spreadsheet program.*

80. Introduction to International Business

The basic conceptual vocabulary and theories of international trade and of foreign direct investment. Serves as a prerequisite to advanced courses in international business offered by several business disciplines.

162. Capstone Course

The integration of knowledge from functional business courses with issues of business ethics and demographic diversity in the workplace, all in a global perspective. May be taught in a national policy framework, a corporate strategy framework, or as a quarter-long computer simulation game. Each framework includes a statistical data analysis component and a communication component. *Prerequisite: senior standing.*

DEPARTMENT OF ACCOUNTING

Professors Emeriti: Charles F. Louie, Thomas Maier
Professor: Paul L. Locatelli, S.J.
Associate Professors: Suzanne M. Luttman, Jane A. Ou, Shahrokh M. Saudagaran, James F. Sepe, Neal L. Ushman *(Chair)*
Assistant Professors: Sandra L. Chamberlain, Michael J. Eames, Lynn M. Pringle
Adjunct Lecturers: Ursula Kaschmitter, William O'Brien

Santa Clara University declares its purpose to be the education of the human person within the Catholic and Jesuit tradition. Within the framework of this overall mission, the Department of Accounting aspires to develop the knowledge, skills, values, and attitudes that graduates will need to succeed as competent, ethical professionals in the practice of accounting and as decision makers in business, government, and not-for-profit organizations.

REQUIREMENTS FOR MAJOR

Upper Division

Eight upper-division courses: Accounting 130, 131, 132, 133, 134, 136, 137, and 138

LOWER-DIVISION COURSES

1. Introduction to Accounting

The role of accounting information in economic decision making. Review of alternative financial accounting models. Managerial accounting issues related to budgeting and performance evaluation. The environment of accounting standard-setting in the United States and abroad. The audit function in financial reporting. Corporate annual reports. Significant current developments in accounting. *Prerequisite: sophomore standing.* (Open to nonbusiness students in winter and spring quarters only.)

2. Financial Accounting

Introduction to principles and procedures underlying external financial reporting. Description of double-entry system and the accounting cycle. Analyses of accounting for assets, liabilities, owners' equity, revenues, and expenses. Preparation and interpretation of financial statements. *Prerequisite: ACTG 1.*

3. Managerial Accounting

Introduction to accounting for management planning, control, and decision making. Cost-profit-volume relationships; cost and revenue information for routine and nonroutine decisions; budgeting and profit planning. Discussions of standard costing, responsibility accounting, and decentralization and transfer pricing in the context of management control of operations. *Prerequisite: ACTG 2.*

UPPER-DIVISION COURSES

130. Intermediate Accounting I

Intensive analysis of generally accepted accounting principles as applied to asset accounting. Standards and alternative procedures for accounting for current assets, investments, plant, and intangibles. *Prerequisite: ACTG 2.*

131. Intermediate Accounting II

Intensive analysis of generally accepted accounting principles as applied to accounting for liabilities, stockholders' equity, and the statement of cash flows. Accounting for income taxes, pension, leases, and the reporting of corporate earnings. *Prerequisite: ACTG 130.*

132. Advanced Accounting I

Partnership accounting from organization and operations to liquidation. Study of accounting for business combinations and consolidated statements of affiliated corporations. Purchase accounting and pooling-of-interests accounting. Intercompany asset transfers and other reciprocal relationships. Ownership changes and segment reporting for diversified companies. *Prerequisite: ACTG 131.*

133. Advanced Accounting II

International accounting, including foreign operations and transactions and international accounting standards; accounting for public sector organizations and other not-for-profit organizations, including topics in governmental accounting and accounting for colleges, universities, and health and welfare organizations. *Prerequisite: ACTG 132.*

134. Accounting and Information Systems

Introduction to accounting information systems in abstract and specific situations—in particular, a study of the influence of computer-based information systems on the functions of the accountant and the accounting profession. Focus on the concepts, applications, and design of accounting information systems that provide management with useful and relevant information. *Prerequisite: ACTG 131.*

136. Advanced Cost Accounting

Detailed study of job-order, process, and standard cost-accounting systems. Budgeting and standard costs and cost-profit-volume analysis in planning and control. Decentralization, transfer pricing and divisional performance measurement, and the use of accounting data in capital budgeting decisions. *Prerequisite: ACTG 3.*

137. Auditing

Examination of the techniques used to obtain and evaluate evidence regarding (1) assertions about the quality of performance of management (operational auditing); and (2) assertions made by management in financial statements of the firm. *Prerequisite: ACTG 131.*

138. Income Taxation

Federal income tax practice and theory applied to the determination of tax liability of the individual. Similarities and differences for partnerships and corporations. *Prerequisite: ACTG 3.*

199. Independent Study

DEPARTMENT OF ECONOMICS

Professors: Mario L. Belotti, William F. Donnelly, S.J., Alexander J. Field, David Friedman, John M. Heineke, Laurence R. Iannaccone, Thaddeus J. Whalen Jr.
Associate Professors: Henry G. Demmert *(Chair)*, Linda Kamas, Daniel Klein, Helen Popper, Thomas R. Russell, William A. Sundstrom
Assistant Professors: Michael Kevane, David Roth
Lecturer: Anu Luther
W. M. Keck Foundation Professor: Mario L. Belotti
Michel and Mary Orradre Professor: Alexander J. Field

As one of the social sciences, economics studies how the choices we make as individuals—as consumers and producers, as savers and investors, as managers and employees, as citizens and voters—combine to determine how society uses its scarce resources to produce and distribute goods and services. This practical, useful discipline provides insights into such important issues as the determinants of wealth and poverty; of unemployment, inflation, and economic growth; of success and failure in the marketplace. The rigorous, systematic analysis that the study of economics brings to bear on these and other real-world issues provides excellent preparation for careers in both the private and the public sectors, as well as for graduate study in economics, business, and law. Economics graduates pursue varied careers in business, law, banking and finance, government service, education, and private consulting.

REQUIREMENTS FOR MAJOR

In addition to fulfilling University Core Curriculum and School requirements for a Bachelor of Science in Commerce degree, majors in economics in the Leavey School of Business and Administration must complete the following departmental requirements:

Upper Division: Economics 114, 115, 180, either 162 or 188 (Capstone Course), and three upper-division economics electives

PREPARATION FOR GRADUATE STUDY

In addition to the standard requirements for graduation, students considering graduate study in either economics (leading to an M.A. or Ph.D.) or business (leading to an MBA or Ph.D.) are strongly encouraged to take Economics 170 (Mathematical Economics and Optimization) and Economics 177 (Advanced Econometrics). Those considering graduate study in economics should also take Economics 116 (History of Economic Thought).

Note: Because graduate study in economics requires an extensive background in mathematics, students considering that option should meet with their adviser as early as possible to plan an appropriate course of study.

Note: Students are strongly encouraged to take Business Administration 40 and 41 in consecutive quarters and Economics 2 and 14 in consecutive quarters.

LOWER-DIVISION COURSES

1. Principles of Macroeconomics

Introduction to the general principles, terminology, and methods of macroeconomics.

2. Principles of Microeconomics I

Introduction to the theory of demand, production, cost, and pricing. *Prerequisite: Math 6, 7, 11, or 30.*

14. Principles of Microeconomics II

Continuation of ECON 2. Required of majors and students in the Leavey School of Business and Administration. *Prerequisites: ECON 2 and Math 11 or 30.*

UPPER-DIVISION COURSES

Prerequisites: Economics 1, 2, and 14, or approval of the instructor are required for all upper-division courses.

101. Resources, Food, and the Environment

See AGRI 101.

110. Natural Resource Economics

The economics of renewable and nonrenewable natural resources. Topics may include energy resources, minerals, fisheries, timber, endangered species, and biodiversity.

114. Intermediate Microeconomic Theory

Microeconomic theory and applications. Topics include consumer behavior, risk and uncertainty, game theory, and welfare economics.

115. Aggregate Economic Theory

Macro, or aggregative, aspects of the economy, emphasizing modern macroeconomic models for explaining the level of output, employment, and prices.

116. History of Economic Thought

Evolution of economic ideas and their influences on the development of economic practices. *Prerequisites: ECON 114 and 115.*

117. European Economic History

Study of the preindustrial environment and industrial growth patterns of Western Europe.

119. American Economic History

Study of growth and institutional change in the U.S. economy since colonial times. Topics include early industrialization, the economics of slavery, and the rise of large business enterprises and labor unions. *Prerequisite: ECON 115.*

120. Economics of the Public Sector

Microeconomic analysis of the role of government in the market economy. Supply of public goods and services, government's role in controlling externalities and regulating private industry, and the economics of the political process.

122. Money and Banking

Theoretical, institutional, and historical approach to the study of money and banking, with particular emphasis on the relationship between the monetary and banking system and the rest of the economy. *Prerequisite: ECON 115 or permission of instructor.*

124. Industrial Organization

Microanalysis of the structure, conduct, and performance of U.S. industry.

126. Economics and Law

An economic analysis of law and legal institutions focusing on the common-law areas of property, contracts, and torts.

127. Public Finance: Taxation

Analysis of various tax policies and their effect on the economy. Individual income taxes, corporate income taxes, consumption taxes, payroll taxes, state and local taxes, and other alternative forms of taxation.

128. Business Cycles and Forecasting

Study of the nature and causes of economic instability in an industrial economy. *Prerequisite: ECON 115 or permission of instructor.*

129. Economic Development

Analysis of the historical and theoretical context underlying present efforts to increase the rate of economic growth in underdeveloped countries.

130. Latin American Economic Development

Examination of the economic development of Latin American countries, with particular emphasis on the relationships between economic growth and their social, political, and economic structures.

134. African Economic Development

Economic problems and development of sub-Saharan Africa with emphasis on the relationships among social, political, and economic factors.

136. 20th-Century Economic History

Focuses on the development of the U.S. economy during the 20th century. Topics include the causes and consequences of economic growth, the Great Depression, the rise of government regulation, the changing role of women in the workforce, and the increasing internationalization of markets during the postwar period.

140. Urban Economics

Examination of the economics of urban problems with emphasis on location and land use, the real estate market, and transportation.

145. Economics of "Nonmarket" Behavior

Theoretical and empirical study of behavior and issues not usually viewed as "economic." Possible topics include economics of family behavior, fertility, crime, addiction, charity, altruism, and religion. *Prerequisite: BUSN 41.*

150. Human Resources Economics

Study of labor productivity, incomes, and employment and how these are affected by labor organizations and labor legislation.

160. The Economics Poverty

Examines theories regarding the perpetuation of poverty in the United States and evaluates public policies aimed at combating poverty.

162. Capstone: Economic Policy and Perspectives

Application of economic analysis to contemporary policy issues. To be taken during senior year. Satisfies Capstone Course requirement. *Prerequisites: ECON 114 and 115. Must have senior standing.*

163. Ethics and Economic Thought

Use of welfare economics to investigate the issues of distributive justice and market allocation. Topics include utilitarianism, Rawls's maximin principle, Nash fairness, and Arrow's impossibility theorem.

170. Mathematical Economics and Optimization

Generalization and reformulation of many familiar micro- and macroeconomic models as mathematical systems. Focus on exploring the properties of these models using mathematical techniques on static models. *Prerequisites: Math 12 or 31, ECON 114 and 115, or permission of instructor.*

171. Topics in Mathematical Economics

Topics in mathematical micro- and macroeconomics at the discretion of the instructor. *Prerequisites: Math 12 or 31, ECON 114 and 115, or permission of instructor.*

174. Statistical Analysis

Foundations of statistical research methods, including distribution theory, estimation, testing, and prediction; special emphasis on multivariate models. *Prerequisite: Math 12 or 31 or equivalent.*

177. Advanced Econometrics

Introduction to the techniques used by economists to estimate and test economic relationships. Focus on regression analysis, time series problems, and estimation of multiple equation models. *Prerequisite: BUSN 41.*

180. International Economics

Analysis of the theory of international trade, problems in balance-of-payments adjustments, and international economic policies.

185. Economics of Technological Change

The economic consequences and causes of technological change. Examination of a succession of technological and organizational breakthroughs and the developments that made these breakthroughs possible.

188. Economics Honors Seminar

Modern economic theories and problems. Satisfies Capstone Course requirement. Admission by invitation only.

199. Independent Study

DEPARTMENT OF FINANCE

Professors: Hersh M. Shefrin, Meir Statman *(Chair)*
Associate Professors: Hoje Jo, Atulya Sarin
Assistant Professors: Yaron Brook, Robert J. Hendershott, Michele LaPlante
Adjunct Lecturer: Arvind Bhandari

The finance function, practiced at the personal or organizational level, private and public, is an integral part of the resource allocation process in a well-functioning economy. Through course work that blends theory and practice, the Department of Finance provides students with the background and skills necessary to meet the ever-increasing complexity and demands of today's product and capital markets.

REQUIREMENTS FOR MAJOR

1. Finance 121, 124, 125, 126, 130, and 151
2. One elective from Finance 128, 145, 148, 198, 199, or Agribusiness 183 or any upper-division accounting or economics course

UPPER-DIVISION COURSES

121. Financial Management

Introduction to the basic concepts of working capital and fixed asset management, valuation, and cost of capital. Topics include financial analysis and forecasting, cash management, credit policy, capital budgeting, short- and long-term financing, stock and bond valuation, dividend policy. *Prerequisites: ACTG 1, 2, and 3 and proficiency with spreadsheets.*

124. Investments and Investment Institutions

Introduction to the nature and functions of securities markets and types of financial instruments traded. The formulation of investment goals and policies, trading strategies, and portfolio management. Emphasis on security analysis and valuation. *Prerequisite: FNCE 121.*

125. Corporate Financial Policy

In-depth examination of the interrelationships between corporate investment and financing decisions and their impact on a firm's pattern of cash flows, return, and risk. Special emphasis on the development of analytical techniques and skills for analyzing performance reflected in financial statements. Case studies are used. *Prerequisite: FNCE 121.*

126. Money and Capital Markets

Role and function of financial institutions, financial flows, interest rate structures, money, and capital markets. Emphasis on the implications for the formulation of business financial policy. *Prerequisites: FNCE 121 and 124.*

128. Real Estate Finance

Analytical concepts associated with the financing of real estate. Market, location, and risk analysis; modern appraisal methods; and impact of economic and environmental trends on real estate values. *Prerequisite: FNCE 121.*

130. Ethics and Finance

Exploration of the ethical dimension of financial markets. Topics include insider trading, moral hazard, agency, adverse selection, and financial market regulations concerning disclosure, price manipulation, suitability, trading interruptions, margin requirements, and short-sale restrictions. *Prerequisites: FNCE 121 and 124.*

145. Management of Financial Institutions

The general management and policies of financial institutions. Topics include regulation of financial institutions, interest rate risk management, liquidity, credit and capital management, investment, and commercial and mortgage banking. *Prerequisites: FNCE 121 and 126 or permission of instructor.*

148. Principles of Insurance

Survey of the general principles of insurance and their application to the various branches of the field. *Prerequisite: FNCE 121.*

151. International Finance

Examination of the functioning of the international monetary system and the financial problems of business firms operating internationally. Transfer of international payments, foreign exchange rates,

balance of payments, international liquidity, investment, financial markets, banking, and financial management. *Prerequisites: FNCE 121 and 124.*

183. Commodities and Futures Markets

See AGRI 183.

198. Internship

Opportunity for selected upper-division students to work in local governmental units or firms. *Prerequisite: upper-division standing and approval of the Undergraduate Committee.*

199. Independent Study

DEPARTMENT OF MARKETING

Professors: Dale D. Achabal, Albert V. Bruno, Shelby H. McIntyre, Tyzoon T. Tyebjee *(Chair)*
Associate Professors: Karen F. A. Fox, Edward F. McQuarrie, J. Michael Munson
Assistant Professor: Kirthi Kalyanam
Executive Lecturer: Lewis C. Winters
Adjunct Lecturer: Gail H. Kirby
Glenn Klimek Professor: Albert V. Bruno
JCPenney Research Professor: Shelby H. McIntyre
L. J. Skaggs Distinguished Professor: Dale D. Achabal

Marketing operates at the cutting edge of a well-managed organization. Development of decision-making and managerial skills are the major objectives of the Department of Marketing Program, with special emphasis in innovation, high technology, retailing, and consumer products.

REQUIREMENTS FOR MAJOR

1. Marketing 181, 183, and 189
2. Three courses from Marketing 165, 176, 178, 179, 182, 184, 185, 186, 187, 188, 197, 198,* and 199

UPPER-DIVISION COURSES

165. Retail Management

Study of trends in retailing and the special managerial problems of retailers. Critical analysis of the retailing process, the environment within which it operates, and its managerial functions. In-depth examination of financial and merchandise strategies. *Prerequisite: MKTG 181.*

168, 169. Retail Studies Seminars

In-depth examination of a number of topics useful to future executives in a retailing environment. Value chains of high-performance retailers, merchandise information systems, personnel and sales force management, negotiation, sales promotion and advertising, communications, merchandising, and retail strategy. *Prerequisites: MKTG 181, 165, an internship, and permission of instructor.*

*Counts as elective only if taken for 5 quarter units.

176. Services Marketing and Management

Effective marketing and management in service enterprises, including hospitality, tourism, financial services, retailing, health care, education, accounting, telecommunications, technical and information services, among others. Focus on customer satisfaction, service quality, service design and implementation, pricing and promotion. Use of cases, field trips, and projects to develop and apply course concepts. *Prerequisite: MKTG 181.*

178. International Marketing

Examination of problems and opportunities in international marketing. Economic, cultural, political, and legal factors influencing trade and marketing. Fundamentals of international trade and the application of marketing tools: marketing research, product/services strategies, advertising, promotion, sales, pricing, and distribution. Case analyses, guest speakers, exams, and a substantial course project. *Prerequisite: MKTG 181.*

179. Small Business Entrepreneurship

Evaluation of venture ideas and the conversion of these ideas into viable ventures. Discussions of cases, lectures, and presentations by guests with experience relating to the starting of new enterprises (e.g., bankers, attorneys, entrepreneurs). Students develop their own five-year business plan for a new enterprise. *Prerequisites: MKTG 181 and some knowledge of accounting and finance.*

181. Principles of Marketing

Introduction to the fundamental principles of contemporary marketing. Covers the role of marketing in society, marketing strategy and planning, segmentation, product policy, pricing decisions, promotion, and distribution. Stresses topical examples. Emphasizes application of basic principles, information sourcing, analytical thinking, communication skills, and teamwork in case analyses and/or a field project.

182. Special Topics in Marketing

Occasional current and interdisciplinary courses offered on a one-time basis or cross-listed with offerings in other departments. May be taken only once in a program of study, even though different versions are offered under the same title. Consult quarterly schedule of classes for description. *Prerequisites: MKTG 181 and current standing as a marketing major.*

183. Buyer Behavior

How consumers process information and make buying decisions. Investigation of influence factors, such as personality, culture, social class, motivation, perception, family, reference groups, on consumer decision making. Decision processes of industrial buyers also studied and compared to those of nonindustrial buyers. Particular emphasis on understanding the decision-making process (both consumer and industrial) and its application to the development of sound marketing strategy. *Prerequisites: BUSN 41 and MKTG 181 or permission of instructor.*

184. Advertising and Promotion

The role of advertising in marketing. The communication process, definition of advertising objectives, strategy formulation, budgeting, media selection, copy testing, evaluating advertising results, and regulation. Student teams develop and competitively present a comprehensive advertising plan or similar project. *Prerequisite: MKTG 181.*

185. Sales Management

The principles of effective selling and the management of salespersons. Relationship of the sales function within the organization. *Prerequisite: MKTG 181.*

186. Marketing for Nonprofit Organizations

The emerging role of marketing in enhancing the effectiveness of nonprofit organizations. The process of product/service development, segmentation and targeting, resource attraction (money and volunteers), communications, pricing, and distribution in this sector. Careers in the nonprofit organization sector. Course activities include case analysis, guest speakers, and a field project. For business majors or with permission of instructor. *Prerequisite: MKTG 181.*

187. Brand/Product Management

Dynamic decision making using a brand management game. Brand teams make inferences about the business environment, decide on what products to offer, what price to charge, how many salespeople to employ, and how much to budget for advertising, in addition to making production and marketing research decisions. Emphasis on the writing and presentation of the brand plan. *Prerequisite: MKTG 181.*

188. Ethics of Advertising and Selling

Application of ethical perspectives to decisions faced by advertisers and sellers. Resolution of specific situations through cases and projects. Heavy emphasis on class discussion and debate.

189. Marketing Research

Study of the application of marketing research methodology to the solution of business problems. Role of marketing research: its design, execution, analysis, and presentation. Projects and use of computers to analyze data. *Prerequisites: BUSN 41 and MKTG 181.*

197. Public Relations and Corporate Communication

Theories and practice of public relations. Practical project involving advocacy writing, effective planning, and objective evaluation. The function of public relations in organizational settings. Ethics for public relations professionals. (Also listed as COMM 149.) *Prerequisite: MKTG 181.*

198. Internship

Opportunity for upper-division students to work in local firms and complete a supervised academic project in that setting. *Prerequisites: declared marketing major, either MKTG 183 or 189, and approval of faculty coordinator.*

199. Independent Study

OPERATIONS & MANAGEMENT INFORMATION SYSTEMS

Professors: Chaiho Kim, Steven Nahmias, Stephen A. Smith
Associate Professors: Charles D. Feinstein, Manoochehr Ghiassi *(Chair)*, Rhonda Lee Righter
Assistant Professors: Narendra Agrawal, Suranjan De, Andy A. Tsay
Acting Assistant Professor: Wesley Szu-way Shu
Visiting Assistant Professor: Elizabeth Schwerer
Adjunct Lecturers: Peggy Randall, Joseph Stampher
Joseph S. Alemany Professor: Chaiho Kim
JCPenney Research Professor: Stephen A. Smith

Operations & Management Information Systems (OMIS) focuses on the use of analytical decision-making methods and computer information systems in business organizations. In addition to mastering all the core Leavey School of Business and Administration requirements, students specialize in the skills needed to

design, implement, and evaluate the computer-based systems that are necessary to manage business operations effectively.

In today's fast-changing, information-driven corporate environment, OMIS majors are in a unique position to develop practical, integrated solutions to complex problems. Their training in both information systems and business places OMIS majors on the fast track toward satisfying and exciting careers.

REQUIREMENTS FOR MAJOR

Lower Division

In addition to the University Curriculum and School requirements, the OMIS major must include:

OMIS 30 (Structured Programming)

Upper Division

Six upper-division courses:

OMIS 105 (Database Management), OMIS 106 (Systems Analysis and Design), and OMIS 107 (Systems Programming), and three courses from the following list: OMIS 103, OMIS 109, OMIS 110, OMIS 111, OMIS 112, OMIS 113, OMIS 117, OMIS 137, OMIS 140, and OMIS 170.

LOWER-DIVISION COURSES

17. Introduction to Business Computing

Use of an integrated set of software tools to solve business problems and communicate results of analysis. Software tools include spreadsheets, databases, graphical tools, and presentation tools. Use of computer networks to access business information. Lab fee required. *Prerequisite: Working knowledge of one word-processing software.*

30. Structured Programming

How to develop and implement well-structured programs for business applications using C. Students are required to develop several programming assignments on a variety of computer systems. Foundation for the study of database design and operating systems. Lab fee required. (Students who receive credit for Math 10 may not take this course for credit.)

31. Business Applications Programming

Examines the applications of software tools offered by various Visual Basic software systems. Students develop business applications in the MS-Windows environment. Applications may include information management systems, graphical user interfaces, and simple multimedia applications. Lab fee required. (Students who take COEN 4, Math 10, or OMIS 30 may not take this course for credit.)

34. Management Information Systems

Introduction to management information systems. The technical foundations for understanding information and telecommunications technologies. The use of this knowledge to analyze and design solutions to business problems and case studies and/or projects to illustrate the use of

information systems to develop these solutions.

50. Critical Issues in Manufacturing Competitiveness

Exploration of the decline of the manufacturing sector in the United States. Consideration of specific industries including consumer electronics, automotive and steel, and the onslaught of foreign competition, particularly from Japan and Germany. The implications of the shift from an industrial to a service economy. Readings from several sources and guest speakers from Silicon Valley augment class discussion. Sponsored by the Competitive Manufacturing Institute. (Open to all students.) *Prerequisite: at least sophomore standing.*

UPPER-DIVISION COURSES

103. Operations Research

Fundamental concepts in operations research for controlling stochastic environments. Brief review of probability concepts. Discussion of Markov processes with application to such areas as brand switching, waiting-line processes, and inventory models. Probable team project assignment. *Prerequisites: BUSN 40 and 41.*

105. Database Management

A hands-on approach to the design and use of databases for business applications. A three-stage approach to database design: conceptual design using the entity-relationship model, logical design using the relational model, and the physical design of relational databases. Study of query languages, normal forms, and application generation. Use of database software is required. Lab fee required. *Prerequisite: OMIS 30 or 34.*

106. Systems Analysis and Design

Study of a methodology that assists in the development of computer-based information systems for business applications. Introduction of analysis tools such as dataflow diagrams, decision tables, Structured English, and conceptual data modeling. Application of these tools to a systems development project is required. Use of CASE tools encouraged. Lab fee required. *Prerequisite: OMIS 34 or permission of instructor.*

107. Systems Programming

Discussion of the fundamental concepts of systems programming. Major focus on the overall structure and capabilities of popular operating systems (UNIX, DOS, VMS, etc.) and how to use operating system facilities to manipulate files, directories, and utility programs. Also covers shell programming concepts for performing system-level programming assignments on dedicated computer systems. Development of several software assignments utilizing system programming concepts is required. Lab fee required. *Prerequisite: OMIS 30 or knowledge of C or Pascal.*

108. Production Management

Survey of problems and analysis related to the production of goods and services. Topics chosen from the following: demand forecasting, production planning and scheduling, inventory control, materials requirement planning, cost and quality control, facility location and layout, and Japanese manufacturing techniques. *Prerequisites: BUSN 40 and 41.*

109. Computer Decision Models

An integrative course on the use of computer models in managerial decision making. Teaches the formulation of business decision problems, solution methods, and interpretation of results, using spreadsheets. Example applications from areas such as forecasting, optimization, simulation, decision analysis, and operations

management. *Prerequisites: BUSN 40 and 41 and spreadsheet proficiency.*

110. Computer Simulation Modeling

Examination of computer simulation modeling for the design and operation of complex processes or systems. Theory and techniques of simulation and simulation languages such as SLAM, GPSS, and GASP; inventory control; assembly and job-shop scheduling; and manufacturing process design. Lab fee required. *Prerequisites: BUSN 40 and 41, and OMIS 30.*

111. Computer Communications Systems

Introduction to the principles and functions of computer communications in today's information systems. Principles of information transfer over a communication link; principles of networking of a variety of devices dispersed over a small or large geographic area; and functions of interest to users of computer-communication systems, such as electronic mail, file transfer, and electronic data interchange. *Prerequisites: OMIS 30 or 31 and 34.*

112. Artificial Intelligence for Business

The applications of artificial intelligence techniques for designing and implementing expert systems for business and industrial applications. Experience in building simple knowledge-based systems using AI programming languages. Lab fee required. *Prerequisites: OMIS 30 or 31 and 34.*

113. Decision Support Systems

Study of the design, implementation, and evaluation of interactive computer-based systems that help decision makers utilize data and models to solve semistructured and unstructured problems. *Prerequisites: OMIS 30 or 31 and 34.*

117. Software Development Project

Integration of system and programming concepts to develop a comprehensive software system. Also presents an overview of software development methodology. *Prerequisite: OMIS 30.*

137. Object-Oriented Programming

Introduction to object-oriented design methodology. Discussion of different programming paradigms, concepts of data abstraction, inheritance, and encapsulation. Topics include an overview of C++ programming language, data abstraction, overloading, manager functions, inheritance, and virtual functions. Development of several programming assignments using C++ is required. Lab fee required. *Prerequisite: OMIS 30 or equivalent.*

140. Manufacturing Processes

Discussion of manufacturing ranging from disconnected processes, such as machine shops and wafer fabs, to semi- or fully-continuous processes, such as automobile assembly lines and oil refineries. Case studies, videos, and on-site plant visitations. Explores management principles of these processes. Discussions, case reports, and group project. Project involves constructing and evaluating the performance of a computerized model of a real manufacturing process, using a manufacturing process re-engineering software that enables users to build a graphical model of manufacturing processes. *Prerequisites: BUSN 40 and 41, and OMIS 108.*

170. Physical Database Design

Methodology for design of physical file structures to support single- and multiple-file applications. Data structures, file structures, file access methods, file manipulation, and algorithmic analysis. *Prerequisite: OMIS 30.*

198. Internship

Opportunity for selected upper-division students to work in local government units or firms. *Prerequisite: upper-division standing and approval of the Undergraduate Committee.*

199. Independent Study

DEPARTMENT OF ORGANIZATIONAL ANALYSIS AND MANAGEMENT

Professors: David F. Caldwell, Jacques Delacroix, André L. Delbecq, James L. Koch, Dennis J. Moberg, Barry Z. Posner, Manuel G. Velasquez
Associate Professors: James L. Hall *(Chair)*, Joel K. Leidecker
Senior Lecturer: David R. Palmer
Charles J. Dirksen Professor of Business Ethics: Manuel G. Velasquez
J. Thomas and Kathleen L. McCarthy University Professor: André L. Delbecq

The Department of Organizational Analysis and Management emphasizes both rigorous analysis and managerial application. Courses are offered in organizational behavior and design, personnel administration, industrial relations, and managerial communication. Additional courses in strategic management, business and public policy, and international management provide a general management perspective.

Management majors are those who want to develop balanced general management skills or to specialize in human resource management. Students in other majors who aspire to supervisory or managerial positions will find several of the department electives useful.

REQUIREMENTS FOR MAJOR

1. Two required courses: Management 60 or 160 and 161
2. Four courses from Management 166, 167, 169, 170, 171, 172, 198, and 199

LOWER-DIVISION COURSE

60. People in Organizations

Human behavior and job performance, motivation theory, interpersonal and group relationships, leadership, conflict and change. Cases, role plays, simulations, and exercises used to demonstrate principles. (Open only to sophomores.) (Business School students who take MGMT 60 must also take MGMT 161 rather than MGMT 160.)

UPPER-DIVISION COURSES

160. Organization and Management

Introduction to organization theory and practice, including management operation, concepts of organization, departmental and interdepartmental relations, and behavior in organizations. (Not open to students who have taken MGMT 60.)

161. Organizational Structure and Design

Theory and practice of organizational design. Issues include departmentation and coordination; the effect of context and technology on structure; and organizational growth, change, and decline. *Prerequisite: MGMT 60 or 160.*

166. Personnel Administration

Comprehensive review of the role and functions of personnel departments in business organizations, with particular emphasis on selection and placement, training and development, and compensation systems. *Prerequisite: MGMT 60 or 160.*

167. Industrial Relations

Examination of union-management relations. Why do employees join unions? How are organizing campaigns and elections won? What are typical negotiating behaviors and strategies? Lecture/discussion, case analyses, negotiation and arbitration simulations, guest speakers. *Prerequisite: MGMT 60 or 160 or permission of instructor.*

169. Business and Public Policy

The impact of social issues on business and business responses to adapt to and influence public policies. Includes ideology, corporate social responsibility, government regulations, and business political activity. Lectures/discussions; case analyses. *Prerequisite: MGMT 60 or 160 or permission of instructor.*

170. International Management

Overview of the issues and problems confronting managers in international work, divided into three segments: the global framework for shared production and trade, institutions by which international work is negotiated and regulated, and operational structures and strategies used by firms and controlled by managers and government representatives. Includes cases and provides a special understanding of nation-state benefits and controls, cultural-developmental variables, and human resource supplies and skills. *Prerequisite: MGMT 60 or 160.*

171. Managerial Communication

Interpersonal and small group communication. Negotiating behavior. Oral and written communication. Integrates theory and skill-building through reading, case analysis, and practice. *Prerequisite: MGMT 60 or 160, or permission of instructor.*

172. Special Topics in Management

Offered occasionally to introduce new topics not covered by existing electives. Topics generally reflect the research interests of the faculty teaching the course. *Prerequisite: MGMT 60 or 160.*

198. Internship

Opportunity for selected upper-division students to work in local organizations. *Prerequisite: upper-division standing and approval of the Undergraduate Committee.*

199. Independent Study

INSTITUTE OF AGRIBUSINESS

Professors: Mario L. Belotti, Robert A. Collins
Associate Professors: Gregory A. Baker, S. Andrew Starbird *(Director)*
Adjunct Lecturer: Daniel J. Aguiar
Naumes Family Professor: Robert A. Collins
W. M. Keck Foundation Professor: Mario L. Belotti

The Institute of Agribusiness offers an MBA in Agribusiness and the following undergraduate classes:

101. Resources, Food, and the Environment

Exploration of relationship among food production, resource use, and the environment. Topics include biotechnology, the green revolution, resource depletion, environmental degradation, and food safety. (Cross-listed with ECON 101.)

183. Commodities and Futures Markets

Introduction to the structure, operation, and function of futures markets. Topics include the determinants of commodity and financial futures prices, hedging strategies, speculation strategies, and options on futures contracts. (Cross-listed with FNCE 183.) *Prerequisites: FNCE 121 and 124.*

7

School of Engineering

The School of Engineering at Santa Clara University has a mission to educate and serve students for the benefit of the Silicon Valley area, the state, the nation, and the world. We do this through academic programs that educate professional engineers who practice with competence, conscience, and compassion, through scholarly activities that create and disseminate new knowledge, and through service activities that benefit our various constituencies and humanity in general.

The School of Engineering confers the degrees of Bachelor of Science in Civil Engineering, Computer Engineering, Electrical Engineering, Engineering, and Mechanical Engineering. Minors in general engineering and computer engineering are also available. The program of study for the degree of Bachelor of Science includes courses that fulfill the goals of the University Core Curriculum, School of Engineering curriculum, and engineering departmental major curriculum. Junior standing in the School of Engineering requires qualification by meeting certain minimum academic standards.

REQUIREMENTS FOR MAJOR: BACHELOR OF SCIENCE

The program leading to the degree of Bachelor of Science consists of a minimum number of quarter units as specified by the department awarding the degree, with a grade point average of at least a C (2.0) in all course work at the University and in the student's engineering courses. Students must declare a major as a condition of registering for the junior year.

For the Bachelor of Science degree, students must fulfill the University requirements indicated below. Students may count courses as fulfilling more than one requirement if the courses have been approved as meeting the goals, outcomes, and criteria of more than one requirement.

English Composition; Third Writing

Three courses: normally, English 1, 2, and an approved technical writing course.

Western Culture

Two courses in one of the following sequences: (a) English 11, 12, and 13; or (b) History 11, 12, and 13; or (c) Philosophy 11, 12, and 13; (d) Art History 11, 12, and 13; or (e) Performance and Culture 11, 12, 13. The two numerically sequential courses in Western Culture should normally be taken in successive academic terms.

Second Language

Recommended proficiency in one foreign language, which may be achieved in high school.

Social Sciences

One course from the list approved by the University Core Curriculum Committee.

World Culture/Societies

One area studies/regional course from the list approved by the University Core Curriculum Committee.

United States

One course from the list approved by the University Core Curriculum Committee.

Mathematics and Natural Sciences

Particular course requirements are in the respective departmental major descriptions.

Technology

This requirement is fulfilled by the combination of ENGR 1, an engineering course requiring extensive computer usage (COEN 6, 11, 44, CENG 15, or approved equivalent), and any upper-division course in the student's major department.

Ethics

One course in general or applied ethics from the list approved by the University Core Curriculum Committee.

Religious Studies

Three religious studies courses: (a) two courses, normally taken during the freshman and sophomore years—one introductory level and one intermediate level; and (b) one advanced-level course taken after completing 88 quarter units. The introductory-level course must be completed first, the intermediate course second, and the advanced-level course last.

Prerequisites

Prerequisites for engineering courses will be enforced. If there are any questions regarding qualifications for a course, check with the course instructor.

Students must fulfill the following requirements for a *Bachelor of Science in Civil Engineering:*

Humanities and Social Sciences	**Units**
University requirements	41
CENG 192B	2
Mathematics and Science	
Math 11, 12, 13, 21, 22 (or AMTH 106), AMTH 108	24
Chemistry 5	5
Physics 4, 4L, 5, 5L, 6, 6L	15
CENG 20	4
Engineering	
ENGR 1	1
CENG 15 (or COEN 6 or 44)	4
ELEN 50	5
MECH 10, 121, 122	13
CENG 10, 41, 42, 43, 115, 121, 125, 128, 132, 135, 140, 141, 143, 145, 192A, 193	60
Three design electives from CENG 133, 134, 135, 137, 138, 142, 144, 147, 150	12
One technical elective from either CENG 118, 123, 139, 148, 162, 199, CHEM 30, or one of the design electives listed above	3
The three design electives and one technical elective should be selected in consultation with an academic adviser to satisfy the requirements of one of the approved emphasis area programs in civil engineering.	
Total (min)	189

Students must fulfill the following requirements for a *Bachelor of Science in Computer Engineering*:

Humanities and Social Sciences	**Units**
University requirements	41
ENGL 182	4
Mathematics and Science	
Math 11, 12, 13, and 21	16
AMTH 106 (or Math 22) and 108 (or Math 122)	8
AMTH 118 or Math 53 or 166	4
Chemistry 5	5
Physics 4, 4L, 5, 5L, 6, 6L	15
Engineering	
ENGR 1	1
CENG 41 or MECH 121 (or CENG 42 or MECH 123 with instructor approval)	4
ELEN 50 and 115	10
COEN 6, 7, 11, 19, 21, 70, 120, 122, 174, 177, 179, 194, 195, and 196	57
Computer Engineering Electives	
Four additional upper-division computer engineering courses forming a coherent emphasis area selected in consultation with an academic adviser	(min) 16

Professional Development *(one of the following)* (min) 4
a. Study abroad (8 or more units in any subjects that do not duplicate other course work; excess units may be used to satisfy other degree requirements)
b. Six-month co-op (COEN 188) with technical report (COEN 189)
c. Preparation for graduate study in computing: (8 or more units of additional upper-division COEN electives)
d. Preparation for a career in business: (8 or more units selected from BUSN 80, COMM 12, 20, 25, MGMT 18, MKTG 181, PHIL 5, 6, 8, or any graduate courses in Engineering Management and Leadership)

Free Electives
Any additional courses so that the total number of units in the program is at least 187.

Total (min) 187

Students must fulfill the following requirements for a *Bachelor of Science in Electrical Engineering*:

Humanities and Social Sciences	**Units**
University requirements	41
ENGL 182	4
Mathematics and Science	
Math 11, 12, 13, 21, AMTH 106 (or MATH 22), AMTH 108 (or MATH 122)	24
Chemistry 5	5
Physics 4, 4L, 5, 5L, 6, 6L, 7	20
Engineering	
ENGR 1	1
CENG 41	4
COEN 6	5
MECH 10, 121	8
ELEN 10, 21, 21L, 33, 50, 100, 104, 105, 110, 115, 151, 194, 195, 196	54

Technical Electives
Four technical electives selected from upper-division electrical engineering courses. (min) 16

Free Elective
One additional course (min) 4

Professional Development *(one of the following):* (min) 2
a. Study abroad (4 or more units in any subjects that do not duplicate other course work: Excess units may be used to satisfy other degree requirements)
b. One co-op course. Students may take one academic year quarter and a summer term for co-op as part of a four-year program. (See Cooperative Education Program on Page 228.)
c. Preparation for graduate study in electrical engineering (4 or more units of additional upper-division or graduate ELEN electives)

Additional Electives
Any additional courses so the total number of units in the program is at least 188.

Total (min) 188

Students must fulfill the following requirements for a *Bachelor of Science in Mechanical Engineering*:

Humanities and Social Sciences	**Units**
University requirements	41
Mathematics and Science	
Math 11, 12, 13, 21; AMTH 106, 118	24
Chemistry 5	5
Physics 4, 4L, 5, 5L, 6, 6L	15
MECH 15	5
Math/Science Elective	4
Engineering	
ENGR 1	1
CENG 41, 43	9
COEN 44	4
ELEN 50	5
MECH 10, 11, 114, 115, 121, 122, 123, 131, 140, 141, 142, 160, 194, 195, 196	64
Technical Electives	
Two are required; one may be 4 units of co-op or 4 units of graduate classes	8
Electives	4
Total (min)	188

Students must fulfill the following school and major requirements for a *Bachelor of Science in Engineering*:

Humanities and Social Sciences	**Units**
University requirements	41
ENGR 182, ENGL 182, or an approved equivalent	2
Mathematics and Science	
Math 11, 12, 13, 21, 22 (or AMTH 106), and one math elective	24
Chemistry 5	5
Physics 4, 4L, 5, 5L, 6, 6L	15
MECH 15	5
Engineering	
ENGR 1	1
CENG 41, 42, 43	13
COEN 6, 7, 11	13
ELEN 21, 21L, 50, 100, 115	20
MECH 10, 11, 121, 122, 123	22
One of the following sequences:	6–8
a. COEN 194, 195, and 196 b. ELEN 194, 195, and 196 c. CENG 192 and 193 d. MECH 114 and 115	
Electives	25–27
Total (min)	195

ENGINEERING HONOR CODE

The Engineering Honor Code is a long-standing Santa Clara tradition. Instituted at the request of the engineering students, the code states: *"All students taking courses in the School of Engineering agree, individually and collectively, that they will not give or receive unpermitted aid in examinations or other course work that is to be used by the instructor as the basis of grading."* Students and teachers cooperate and share responsibilities under the code. *Teachers* are responsible for making clear what aid is permissible and for using procedures that minimize temptations to violate the code. *Students* are responsible for behaving honorably, for actively ensuring that others as well as themselves uphold the code, and for being responsive to violations. *Students* dominate the administration of the code, and they take full responsibility for trying cases of alleged violations and for recommending penalties. Alleged violations should be reported to the Engineering Honor Code Committee. More information on the code and its procedures is contained in a leaflet available from the School of Engineering.

ENGINEERING FACILITIES

The School of Engineering's laboratories are contained in three buildings in the Sullivan Engineering Center, originally built in 1960 and refurbished in 1985–86. The facilities are supported by the incremental tuition for engineering students.

General Computing Facilities

The School of Engineering Design Center has a network of more than 70 Hewlett-Packard 9000 high-end workstations and X-terminals grouped into two large classrooms and one smaller workroom. Advanced color printing and plotting capability are available throughout the Design Center. All workstations run HP's UNIX operating system and are fully networked with Internet and World Wide Web access. All systems have large, high-resolution color monitors and can utilize over 25 major commercial software packages. Software includes computer-aided design (CAD) and analysis applications for civil, computer, electrical, and mechanical engineering, as well as a variety of programming languages. The Design Center also offers a cluster of PCs and Macintosh computers for engineering student usage. The Design Center is open and available for students approximately 115 hours per week during the academic year.

Civil Engineering Laboratories

The *Civil Engineering Laboratories* contain equipment and facilities to support research and teaching in materials engineering, structural engineering, stress analysis, soil mechanics, geology, transportation engineering and surveying, environmental quality, and hydraulics.

The *Computer Analysis and Design Laboratory* maintains Pentium™-based personal computers that are used in course assignments and design projects.

Technical software packages in all the major areas of civil engineering are available on the systems with full documentation available to students.

The *Concrete Testing Laboratory* contains facilities for mixing, casting, curing, and testing concrete cylinders and constructing reinforced-concrete test specimens.

The *Environmental Laboratory* is equipped with instrumentation needed for basic chemical and biological characterization of water, wastewater, and air samples. Several pilot-scale treatment systems are also available.

The *Geology Laboratory* is equipped with extensive rock and mineral samples as well as topographic, geologic, and soil maps.

The *Hydraulics Laboratory* is shared with the Mechanical Engineering Department. It contains a tilting flume that can be fitted with various open-channel fixtures.

The *Soil Mechanics Laboratory* contains equipment for testing soils in shear, consolidation, and compaction and for other physical and chemical tests. Field testing and sampling equipment is also available. A complete cyclic triaxial testing system with computer control is used for both research and instructional purposes.

The *Structures and Materials Testing Laboratory* is equipped with three universal testing machines that are used for testing a variety of construction materials, including composites, steel, concrete, aluminum, and wood. The largest testing machine has a 1780-KN capacity. Small structural samples can be tested on low-capacity Instron or Applied Test Systems machines. A high-speed data acquisition and control system and a variety of digital and analog instruments are also available for material and structural testing. The laboratory also has a reaction frame, which is used to accommodate custom test setups.

The *Surveying Laboratory* has a wide variety of equipment, such as self-leveling levels, transits, theodolites, and electronic distance-measuring devices available for instructional purposes.

The *Traffic Laboratory* has electronic volume counters that are used in studies to classify vehicles and measure their speeds in user-specified ranges and periods of time. This equipment is used for instructional and research purposes.

Computer Engineering Laboratories

The *ASIC Testing Laboratory* (ATL) supports research conducted by graduate students from the Electrical Engineering and Computer Engineering departments. Computer-aided testing packages from industry and the public domain are used in such projects as fault analysis on the device level, functional testability measures, partitioning HDL models for testability, and rapid prototyping using field programmable gate arrays (FPGAs).

The *Computer Systems and Parallel Processing Research Laboratory* supports research in systolic array design, interconnection networks, parallel operating systems, formal design verification, expert system development for architectural design, parallel software development methodology, application-oriented parallel algorithms, and VLSI design.

The *Digital Systems Laboratory* (operated jointly with the Electrical Engineering Department) provides complete facilities for experiments and projects

ranging in complexity from a few digital integrated circuits and other electronic components to complete computer systems. It includes a variety of development systems to support microprocessor-based design, VLSI design, and other computer design projects. It also holds facilities to support digital signal processing projects.

The *Distributed Computing Research Laboratory* is designed to support a variety of research activities in distributed computing, including parallel architectures; parallel applications; high-performance, high-speed, local area networks; lightweight protocols; and distributed operating systems.

The *Microelectronics Laboratory* provides teaching and research facilities for semiconductor devices and integrated circuit design, fabrication, and characterization. Ongoing research topics include silicon heterostructures, thin dielectrics, and high-temperature superconductors on silicon devices.

The *Object Technology Laboratory* (OTL) is a center for research and education in all aspects of object technology, which is a new paradigm in software system design, development, and implementation. Sponsored research projects conducted at OTL address the theoretical development and application of object technology. Advanced seminars and short courses sponsored by OTL provide an opportunity to learn about the latest developments in object technology.

The *Software Engineering Research Laboratory* is a dedicated facility for the support of various research activities aimed at developing engineering techniques and tools that help produce and validate high-quality software. Specific research activities include formal specification and verification methods/tools, design framework for concurrent systems; Case architect, logic programming paradigms, and automatic reasoning.

The *Storage Technology Laboratory* is used primarily for graduate research, although senior projects are encouraged and supported. Facilities include a separate laboratory area with a state-of-the-art Guzik test stand and associated instrumentation for high-density magnetic head and disk studies with capabilities to digitize readback signals and utilize them to evaluate simulation models of the recording channel; an HP 750 workstation linked to the School of Engineering Design Center; and advanced computers and software. Research areas include: studies on novel silicon planar heads; advanced recording channels based on digital signal processing such as PRML; and the high-rate disk-drive architectures that are envisaged with the growth of multimedia applications. The laboratory is part of an Industry/University Consortium that is pursuing government-funded research to achieve 10-GB/square-inch recording densities by the end of the decade. Research is being pursued as part of this program.

Electrical Engineering Laboratories

The *ASIC Testing Laboratory* (ATL) supports research conducted by graduate students from the Electrical Engineering and Computer Engineering departments. Computer-aided testing packages from industry and the public domain are used in such projects as fault analysis on the device level, functional testability measures, partitioning HDL models for testability, and rapid prototyping using field programmable gate arrays (FPGAs).

The *Digital Systems Laboratory* (operated jointly with the Computer Engineering Department) provides complete facilities for experiments and projects ranging in complexity from a few digital integrated circuits and other electronic components to complete computer systems. It includes a variety of development systems to support microprocessor-based design, VLSI design, and other computer design projects. It also holds facilities to support digital signal processing projects.

The *Intelligent Control Laboratory* includes two IBM robotic arm systems and several servo-experimenters with computer support systems.

The *Microelectronics Laboratory* provides teaching and research facilities for semiconductor devices and integrated circuit design, fabrication, and characterization. Ongoing research topics include silicon heterostructures, thin dielectrics, and high-temperature superconductors on silicon devices.

The *Microwave and Communications Laboratory* provides a full range of modern measurement capability from 0–22 GHz, including a number of automatic network analyzers and modern spectrum analyzers. It also has extensive computer-aided design and simulation capability, based largely on modern commercial software running on workstations. Interconnection of hardware measurements and computer simulation is stressed.

The *Signal and Image Processing Laboratory* is used primarily for graduate research. It has a Sun SPARC server 630 and SPARC workstations. Texas Instruments TMS320 systems are used for real-time signal processing. Research areas include theoretical issues in image processing, image analysis, three-dimensional modeling from two-dimensional data, adaptive signal processing, artificial neural networks, and nonlinear signal processing. Applications include medical image analysis, two- and three-dimensional image reconstruction, passive navigation for robotic vision, and VLSI implementations of adaptive signal processing.

The *Storage Technology Laboratory* is used primarily for graduate research, although senior projects are encouraged and supported. Facilities include a separate laboratory area with a state-of-the-art Guzik test stand and associated instrumentation for high-density magnetic head and disk studies with capabilities to digitize readback signals and utilize them to evaluate simulation models of the recording channel; an HP 750 workstation linked to the School of Engineering Design Center; and advanced computers and software. Research areas include: studies on novel silicon planar heads; advanced recording channels based on digital signal processing such as PRML; and the high-date disk-drive architectures that are envisaged with the growth of multimedia applications. The laboratory is part of an Industry/University Consortium that is pursuing government-funded research to achieve 10-GB/square-inch recording densities by the end of the decade. Research is being pursued as part of this program.

Mechanical Engineering Laboratories

The *Mechanical Engineering Laboratories* contain facilities for instruction and research in the fields of fluid mechanics, thermodynamics, heat and mass transfer, propulsion, combustion, power generation, shock and vibration, instrumentation, control systems, and materials science and manufacturing.

A variety of internal combustion engines installed on dynamometer stands can be used for studies in diesel and spark-ignition engines. The facilities include instrumentation for evaluating engine performance, measuring exhaust pollutants, and measuring noise. Engine studies can be conducted using a variety of fuels.

The fluid dynamics facilities contain equipment to illustrate the principles of fluid flow and to familiarize students with hydraulic machines and their associated instrumentation. Each device may be supplied from a pump or from a constant-level standpipe with a 25-foot head. A subsonic wind tunnel equipped with an axial flow fan with adjustable blades is available to conduct experiments in aerodynamics and turbomachinery.

The *Plastics Recycling Laboratory* contains a variety of plastics-processing and test equipment for forming and analyzing recycled plastic materials and products. This lab contains a materials grinder, Morgan Press molding machine, melt indexer, APS impact tester, Instron tensile tester, differential scanning calorimeter, thermogravimetric analyzer, and dynamic mechanical analyzer.

Included also in the Mechanical Engineering Laboratories is equipment to study electromechanical energy conversion and response and control of mechanical systems. The metallurgy laboratory features a modern scanning electron microscope that is used to familiarize students with properties of materials. The machine shop is equipped with manual mills, lathes, and a Haas CNC mill for student instruction, construction of experimental devices, and student projects.

There is also an *Optics Laboratory* with a He-Ne laser for holographic measurement.

COOPERATIVE EDUCATION PROGRAM

Coordinator: Lynne Russell

The Cooperative Education Program integrates classroom work with practical industrial experience. The program provides alternate or parallel periods of college education with periods of training in industry. The industrial training is related to the field of study in which the student is engaged and often is diversified to afford a wide range of experience. The objective of the program is to provide students the opportunity, through this interaction of study and work experience, to enhance their academic knowledge, to further their personal and work experience, and to learn about working with people.

The program is open to both undergraduate and graduate students. To qualify for the program, graduate students must have completed at least 12 quarter units at the University. Undergraduates must have junior standing and maintain a 2.5 or higher GPA. Interested students should contact the Cooperative Education Office in the Career Services Office early in their academic program.

Participating students pay tuition for 2 units plus an administrative fee of $250. Co-op credit can be used as free elective credit in meeting undergraduate degree requirements.

DA VINCI (GENERAL ENGINEERING) PROGRAM

Coordinator: Robert J. Parden

This program is designed to give each student a thorough grounding in the fundamentals of engineering, physical science, mathematics, applied science, humanities, and social science. The program has two objectives: to provide students with the background needed to select a specific engineering discipline and to prepare students to pursue that discipline. Exceptional students may choose to design an individual program for upper-division study with an appropriate adviser. A specific discipline or individual program must be selected by the end of the sophomore year before registration for the junior year.

SCHOOL OF ENGINEERING

Dean: Terry E. Shoup
Assistant Dean for Undergraduate Programs: Steven C. Chiesa

The following general engineering courses are interdisciplinary in nature and are offered primarily to satisfy certain minor program requirements.

1. Introduction to Engineering

Introduction to the different engineering disciplines. An overview of the types of projects in which each discipline participates. Interdisciplinary aspects of engineering. Engineering professionalism and ethics. (1 unit)

10. Technology and Society

Impact of technology on the evolution and function of modern society. The impact of technologies related to communications, transportation, information management, energy generation, medicine, and public health. Ethical aspects of the application of new technologies. (4 units)

15. Environmental Quality Engineering

Behavior of chemicals in the environment. Environmental protection strategies. Environmental impact assessment. Risk analysis and economic considerations. Discussion of local, regional, and global environmental problems and alternative solutions. For nonengineering majors. *Prerequisite: Math 6 or equivalent.* (4 units)

182. Technical Communications

Organization of engineering proposals and reports. Use of written, graphical, and multimedia materials for effective technical communication. Development of oral presentation skills and strategies. *Prerequisites: English 2 and junior status.* (2 units)

DEPARTMENT OF APPLIED MATHEMATICS

Associate Professor: George R. Fegan *(Chair)*
Assistant Professor: Jeffery J. Leader

With the exceptions of the three courses below, the Applied Mathematics Program is designed for graduate study. A complete listing of the offerings may be found in the *School of Engineering Graduate Programs* bulletin.

UPPER-DIVISION COURSES

106. Differential Equations

First-order linear differential equations, systems of linear differential equations, homogeneous systems of linear differential equations with constant coefficients, the Laplace transform, the solution of differential equations by Laplace transform. *Prerequisite: Math 21.* (4 units)

108. Probability and Statistics

Definitions of probability, sets, sample spaces, conditional and total probability, random variables, distributions, functions of random variables, sampling, estimation of parameters, testing hypotheses. *Prerequisite: Math 21.* (4 units)

118. Numerical Methods

Numerical solution of algebraic and transcendental equations, finite differences, numerical differentiation and integration, and solution of ordinary differential equations. Solution of representative problems on the digital computer. *Prerequisites: ability to program in some computer language (including MATLAB commands), COEN 4, 6, or 44, Math 21, and AMTH 106.* (4 units)

DEPARTMENT OF CIVIL ENGINEERING

Professors: E. John Finnemore, Sukhmander Singh *(Chair)*
Associate Professors: Steven C. Chiesa, Reynaud L. Serrette
Assistant Professors: Salameh A. Nsour, Wendy Taniwangsa
Wilmot J. Nicholson Family Professor: Sukhmander Singh

Civil engineering encompasses water resources engineering, transportation engineering, structural engineering, environmental engineering, geotechnical engineering, and construction engineering.

Water resources engineering deals with the utilization and conservation of surface and ground waters, water supply and distribution, wastewater reclamation, flood control, and irrigation.

Transportation engineering is related to the planning, design, and operation of highways, airports, railways, waterways, and specialized facilities such as tunnels, canals, and harbors.

Structural engineering involves planning and design of such structures as bridges, industrial and commercial buildings, and various special-purpose structures.

Environmental engineering deals with theoretical and applied aspects of water supply, pollution control, and solid and hazardous waste management.

Geotechnical engineering concerns the nature and use of earth media as engineering materials in the analysis, design, construction, and maintenance of foundations, retaining walls, subsurface facilities, and other engineering works.

Construction engineering pertains to the planning, scheduling, construction, and financing of civil engineering–related projects.

Engineering mechanics relates to solid body mechanics; namely, statics and dynamics of rigid bodies and mechanics of deformable bodies.

Civil engineering students, by careful choice and scheduling of electives in consultation with an adviser, can develop a specialized program in a desired area of civil engineering in addition to the courses required of all civil engineering graduates. Seniors may enroll in introductory graduate courses to satisfy technical elective requirements. Additionally, civil engineering students may spend time in a public or private engineering office as an intern or co-op student, learning the functions of civil engineering practice.

Civil Engineering Laboratories

The *Civil Engineering Laboratories* contain equipment and facilities to support research and teaching in materials engineering, structural engineering, stress analysis, soil mechanics, geology, transportation engineering and surveying, environmental quality, and hydraulics.

The *Computer Analysis and Design Laboratory* maintains Pentium™-based personal computers that are used in course assignments and design projects. Technical software packages in all the major areas of civil engineering are available on the systems with full documentation available to students.

The *Concrete Testing Laboratory* contains facilities for mixing, casting, curing, and testing concrete cylinders and constructing reinforced-concrete test specimens.

The *Environmental Laboratory* is equipped with instrumentation needed for basic chemical and biological characterization of water, wastewater, and air samples. Several pilot-scale treatment systems are also available.

The *Geology Laboratory* is equipped with extensive rock and mineral samples as well as topographic, geologic, and soil maps.

The *Hydraulics Laboratory* is shared with the Mechanical Engineering Department. It contains a tilting flume that can be fitted with various open-channel fixtures.

The *Soil Mechanics Laboratory* contains equipment for testing soils in shear, consolidation, and compaction and for other physical and chemical tests. Field testing and sampling equipment is also available. A complete cyclic triaxial testing system with computer control is used for both research and instructional purposes.

The *Structures and Materials Testing Laboratory* is equipped with three universal testing machines that are used for testing a variety of construction materials, including composites, steel, concrete, aluminum, and wood. The largest testing machine has a 1780-KN capacity. Small structural samples can be tested on low-capacity Instron or Applied Test Systems machines. A high-speed data ac-

quisition and control system and a variety of digital and analog instruments are also available for material and structural testing. The laboratory also has a reaction frame, which is used to accommodate custom test setups.

The *Surveying Laboratory* has a wide variety of equipment, such as self-leveling levels, transits, theodolites, and electronic distance-measuring devices available for instructional purposes.

The *Traffic Laboratory* has electronic volume counters that are used in studies to classify vehicles and measure their speeds in user-specified ranges and periods of time. This equipment is used for instructional and research purposes.

LOWER-DIVISION COURSES

10. Surveying

Survey instruments: their use and care. Principles of topographic mapping, linear measurements, leveling, traverses, curves, boundary, and public surveys. Field laboratory. (4 units)

15. Computer Applications in Civil Engineering

Computer-based methods for technical problem solving. Use of spreadsheet programs, math analysis programs, and computer programming to model and analyze engineering systems. Graphical presentation of technical data. Laboratory. (4 units)

20. Geology

Development and formation of geologic materials. Significance of structure, land form, erosion, deposition. Stream and shoreline processes. Surface water. Laboratory. (4 units)

41. Mechanics I: Statics

Resolution and composition of force systems and equilibrium of force systems acting on structures and mechanisms. Distributed forces. Friction. *Prerequisites: Physics 4 and MECH 10.* (4 units)

42. Mechanics II: Dynamics

Dynamics of a particle and a system of particles. Work and energy methods. Momentum methods. *Prerequisite: CENG 41.* (2 units)

43. Mechanics III: Strength of Materials

Analysis of stresses and strains in machines and structural members. Axial forces, torsion, bending, and combined loads. Stability of columns. Energy theorems and their applications. Laboratory. *Prerequisite: CENG 41.* (5 units)

UPPER-DIVISION COURSES

115. Civil Engineering Materials

Origin, manufacture, and processing of materials used in civil engineering. Physical and mechanical properties of metals, wood, plastics, cement, concrete, and other engineering materials. Corrosion and its prevention. Laboratory. *Prerequisite: Chemistry 5.* (4 units)

118. Construction Engineering

Construction management. Equipment. Drawings and specifications, cost estimating, bidding. Contracts, bonds, financing, insurance. Labor. Project planning and scheduling. *Prerequisite: junior standing.* (3 units)

121. Geotechnical Engineering

Origin, development, and properties of soils. Classification of soils and applications of engineering mechanics to soils as an engineering material. Water in soils. Soil-testing methods. Compaction, stabilization, consolidation, shear strength, and

slope stability. Laboratory. *Prerequisites: CENG 20 and 43.* (4 units)

123. Environmental Reaction Engineering

Reaction stoichiometry and kinetics. Reactions of environmental significance. Dynamic and equilibrium system modeling. Reactor configurations and their impact on the extent of reaction. Laboratory. *Prerequisites: Chemistry 5 or equivalent, AMTH 106, and junior standing.* (4 units)

125. Municipal Engineering Design

Various aspects of civil engineering as applied in municipal (public works) design practice. Maps and plats; site layout and earthworks; drainage; streets and utilities. Design laboratory. *Prerequisite: CENG 10.* (4 units)

128. Engineering Economics

Time value of money. Economic analysis of engineering projects. Planning and capital budgeting. Rate-of-return analysis. Depreciation. Cash-flow analysis. (2 units)

132. Structural Analysis

Analysis of statically determinate beams, trusses, and frames. Influence lines for beams. Deflections computed using moment area, virtual work, and other analytical methods. Introduction to statically indeterminate analysis using stiffness and flexibility methods. Introduction of computer applications. *Prerequisite: CENG 43.* (4 units)

133. Timber Design

Review of timber structural systems. Design of structural members for tension, compression, bending, and shear. Design of shear walls and diaphragms. Timber design project required. May be taken for graduate credit. *Prerequisite: CENG 132.* (4 units)

134. Structural Steel Design

LRFD concepts of structural steel design for buildings and other structures. Types of loading. Design of individual members including tension members, beams, and columns. Steel design project is required. *Prerequisite: CENG 132.* (4 units)

135. Reinforced Concrete Design

Design of elementary structures using ACI code methods. Introduction to materials and design methods of reinforced concrete structures. Design of reinforced concrete beams and one-way slabs considering deflection, flexure, shear, and anchorage. Design of columns and spread footings. Laboratory includes experiments and design sessions in order to develop a structural design project in reinforced concrete. *Prerequisite: CENG 132.* (5 units)

136. Advanced Concrete Structures

Analysis and design of reinforced-concrete beams and columns for flexure, shear, axial load, torsion, and anchorage. Behavior and design of reinforced-concrete frame and frame-wall structures for gravity and lateral loads. Discussion of ACI code and commentary. May be taken for graduate credit. *Prerequisite: CENG 135.* (4 units)

137. Earthquake Engineering Design

Introduction to the source, propagation, and measurement of seismic activity and its effect on structures. Introduction to UBC and SEAOC provisions for seismic design. Special considerations for earthquake-resistant design of steel, timber, and reinforced-concrete structures. May be taken for graduate credit. *Prerequisite: CENG 132.* (4 units)

138. Geotechnical Engineering Design

Foundation exploration; bearing capacity and settlement analysis; spread foundations; piles and caissons; earth-retaining structures; loads on underground conduits; subsurface construction. May be taken for graduate credit. *Prerequisites: CENG 121 and 135.* (4 units)

139. Groundwater Hydrology

Groundwater occurrence, flow principles, flow to wells, and regional flow. Groundwater contamination, management, and models. Field methods. Field trips. Laboratory. *Prerequisite: MECH 122.* (3 units)

140. Water Resources Engineering

Concepts of various aspects of water resources: surface water, groundwater, water supply and distribution, hydraulic structures and irrigation. Physical hydrology. Interrelationship of all aspects. Importance of water resources to the total needs of the community. Laboratory. *Prerequisite: MECH 122.* (4 units)

141. Hydraulic Engineering

Principles of hydraulics; flow in pipes and pipe networks; water hammer and surge tanks; steady flow in open channels; forces due to fluid flow. *Prerequisite: MECH 122.* (4 units)

142. Water Resources Design

Design of system components for water supply and flood control projects including storage facilities, closed conduits, open channels, well fields, and pumping systems. *Prerequisites: CENG 140 and 141.* (4 units)

143. Environmental Engineering

Water and air quality. Water supply and pollution control; air pollution control. Management of solid and hazardous wastes. Laboratory. *Prerequisites: Chemistry 5 and junior standing.* (4 units)

144. Environmental Systems Design

Design of treatment and distribution systems for potable water. Design of collection and treatment systems for water pollution control and wastewater reclamation. Laboratory. *Prerequisites: CENG 141 and 143.* (4 units)

145. Transportation Engineering Design

Transportation systems analysis and design. Traffic flow. Geometric design of systems. Principles of highway design. Planning, construction, and operation of transportation systems. Transportation policies and economics. *Prerequisites: CENG 10 and junior standing.* (4 units)

147. Pavement Design

Paving materials. Geometric and structural design of highways. Urban street layout and details. Layout and design of airport runways. *Prerequisites: CENG 121 and 135.* (4 units)

148. Structural Systems

Introduction to principles of material selection, choice of structural configuration, and structural design of building structures as 3-D systems. Discussion of fire protection. Estimation of design loads. Approximate techniques for system design and evaluation. Horizontal and vertical subsystems. *Prerequisite: CENG 43.* (3 units)

150. Traffic Engineering: Design and Operations

Basic characteristics of motor-vehicle traffic, highway and intersection capacity, applications of traffic control devices, traffic design of parking facilities, engineering studies, signal design, traffic safety, design of crash barriers. May be taken for graduate credit. *Prerequisite: CENG 145.* (4 units)

162. Computational Water Resources

Use of professional applications software to design and evaluate facility components and systems for water resources engineering projects. Laboratory. *Prerequisites: CENG 140 and 141.* (3 units)

188. Co-op Education

Integration of classroom study and practical experience in a planned program designed to give students practical work experience relating to their academic field of study and career objectives. Alternate or parallel periods of classroom study with periods of training in industry and

government. Work includes overall report on assignment activities. P/NP grading. May be taken for graduate credit. Additional fees required. (2 units)

189. Co-op Technical Report

Credit given for a technical report on a specific activity such as a design or a research project, etc., after completing the co-op assignment. Approval of department co-op adviser required. Letter grades based on content and presentation quality of report. May be taken for graduate credit. (2 units)

192A. Civil Engineering Design Methods

Introduction to problem-solving methodology for design of civil engineering systems and components. Applications of engineering techniques and procedures to civil engineering design. Preliminary design studies and evaluation of alternatives. Environmental impact assessment. Selection of a topic for the Senior Design Project (CENG 193) and initial conceptual design. *Prerequisite: senior standing.* (2 units)

192B. Technical Writing for Civil Engineers

Organization of engineering proposals and reports. General aspects of technical communications. Content and organization of written contract documents. Development of oral presentation skills and strategies. *Prerequisites: English 2 and concurrent enrollment in CENG 192A.* (2 units)

193. Senior Design Project

Investigation of an approved civil engineering project. The design process—including problem formulation, analysis, preliminary design, final design, and plans—is completed. Students present results at Senior Design Conference. *Prerequisite: CENG 192.* (4 units)

198. Internship

Time off campus with an engineering organization. Different aspects of work in the assigned professional office. Oral and written reports. *Prerequisites: senior standing and approval of internship coordinator.* (4 or 8 units)

199. Directed Research

Investigation of an approved engineering problem and preparation of a suitable project report. Conferences with faculty adviser are required. *Prerequisite: senior standing.* (2–6 units)

DEPARTMENT OF COMPUTER ENGINEERING

Professors: Ruth E. Davis, Mohammad Ali Ketabchi
Associate Professors: Hasan S. AlKhatib, Ronald L. Danielson, Daniel W. Lewis *(Chair)*, Qiang Li, Nam Ling, Weijia Shang
Visiting Assistant Professor: Thomas Schwarz, S.J.
Clare Booth Luce Professor: Weijia Shang
Packard Mentor/Scholar Professorship: Ruth E. Davis

The Computer Engineering degree features a balanced core program in which each student studies the engineering aspects of hardware and software as well as the underlying theory of computation. The Computer Engineering electives permit students to build on this core with varying emphasis, depending on their interests.

The Computer Engineering Program is supported by the facilities of the School of Engineering and the University's Academic Computing Center. The

principal teaching computer system in the School of Engineering has a network of more than 70 HP 9000 high-end workstations and X-terminals, all in the Engineering Design Center—a well-maintained sophisticated computing system available to undergraduate as well as graduate students. A large number of Sun and HP workstation systems and other equipment are available in other laboratories described below. The principal computing facilities supported by the Academic Computing Center include an AlphaServer/275 and six personal computer laboratories with more than 200 Macintoshes and IBM PCs.

Computer Engineering Laboratories

The *ASIC Testing Laboratory* (ATL) supports research conducted by graduate students from the Electrical Engineering and Computer Engineering departments. Computer-aided testing packages from industry and the public domain are used in such projects as fault analysis on the device level, functional testability measures, partitioning HDL models for testability, and rapid prototyping using field programmable gate arrays (FPGAs).

The *Computer Systems and Parallel Processing Research Laboratory* supports research in systolic array design, interconnection networks, parallel operating systems, formal design verification, expert system development for architectural design, parallel software development methodology, application-oriented parallel algorithms, and VLSI design.

The *Digital Systems Laboratory* (operated jointly with the Electrical Engineering Department) provides complete facilities for experiments and projects ranging in complexity from a few digital integrated circuits and other electronic components to complete computer systems. It includes a variety of development systems to support microprocessor-based design, VLSI design, and other computer design projects. It also holds facilities to support digital signal processing projects.

The *Distributed Computing Research Laboratory* is designed to support a variety of research activities in distributed computing, including parallel architectures; parallel applications; high-performance, high-speed, local area networks; lightweight protocols; and distributed operating systems.

The *Microelectronics Laboratory* provides teaching and research facilities for semiconductor devices and integrated circuit design, fabrication, and characterization. Ongoing research topics include silicon heterostructures, thin dielectrics, and high-temperature superconductors on silicon devices.

The *Object Technology Laboratory* (OTL) is a center for research and education in all aspects of object technology, which is a new paradigm in software system design, development, and implementation. Sponsored research projects conducted at OTL address the theoretical development and application of object technology. Advanced seminars and short courses sponsored by OTL provide an opportunity to learn about the latest developments in object technology.

The *Software Engineering Research Laboratory* is a dedicated facility for the support of various research activities aimed at developing engineering techniques and tools that help produce and validate high-quality software. Specific research activities include formal specification and verification methods/tools, design

framework for concurrent systems; Case architect, logic programming paradigms, and automatic reasoning.

The *Storage Technology Laboratory* is used primarily for graduate research, although senior projects are encouraged and supported. Facilities include a separate laboratory area with a state-of-the-art Guzik test stand and associated instrumentation for high-density magnetic head and disk studies with capabilities to digitize readback signals and utilize them to evaluate simulation models of the recording channel; an HP 750 workstation linked to the School of Engineering Design Center; and advanced computers and software. Research areas include: studies on novel silicon planar heads; advanced recording channels based on digital signal processing such as PRML; and the high-rate disk-drive architectures that are envisaged with the growth of multimedia applications. The laboratory is part of an Industry/University Consortium that is pursuing government-funded research to achieve 10-GB/square-inch recording densities by the end of the decade. Research is being pursued as part of this program.

LOWER-DIVISION COURSES

1. Understanding Digital Technologies

Overview of major technical areas in digital computers: semiconductor devices, computer architecture, software development and systems, and computer networks. Coverage of fundamental concepts, historical development trends, current state of the art, and challenges to continued development in each area. Students gain an intuitive understanding of the workings of digital computer technology, an ability to put new developments in context, and an appreciation for the impact of these technologies on society. Course satisfies the University Core requirement in technology. (This course is not intended for engineering majors.) *Prerequisite: high school algebra.* (4 units)

4. Introduction to Programming

Structured algorithmic approach to problem solving using a high-level language. Programming techniques such as top-down or stepwise refinement. Specification writing and the importance of documentation and self-documenting code. Credit not allowed for both COEN 4 and Math 10 or DISC 30. (4 units)

6. Introduction to Computing

Introduction to C++. Data types, variables, functions, parameters, control constructs, I/O. Use of simple C++ classes. Problem definition; design and implementation of algorithms. Elements of logic and logic expressions. Concept of recursion. Testing and debugging. Internet information access tools. Overview of computing as a discipline. Credit not allowed for both COEN 6 and Math 10 or OMIS 30. (5 units)

7. Data Structures and Abstraction

Pointers and recursion. Data abstraction: abstract data types and object-oriented programming; building on existing components; relevant features of C++: classes and objects, inheritance, constructors and destructors. Simple data structures: stacks, queues, lists, binary trees, hashing, tables, graphs; implementation as abstract data types. Internal sorting: review of selection, insertion and exchange sorts; quicksort, heapsort. Analysis of run-time behavior of algorithms; Big-O notation. Completion of at least four sizable programming assignments (400 lines). *Prerequisite: COEN 6.* (Credit not allowed for both COEN 7 and Math 61.) (4 units)

11. Introduction to Computer Organization

Evolution of digital computers. Overview of computer systems: CPU, memory, I/O interfaces, peripheral and mass storage devices, and networks. Logic operations, gates, and memory cells. Number systems: arithmetic and information representation; assembly and machine language programming: addressing techniques; instruction set: data movement, arithmetic and logic operations, machine control, branching and looping, stack operations, procedure calls, and parameter passing. Exercises on debugging compiler-generated assembly code. *Prerequisite: Knowledge of a high-level programming language.* (5 units)

19. Discrete Mathematics

Relations and operations on sets, orderings, elementary combinatorial analysis, recursion, algebraic structures, graphs. (Also listed as Math 51.) (4 units)

21. Introduction to Logic Design

Boolean functions and their minimization. Designing combinational circuits, adders, multipliers, multiplexers, decoders. Noise margin, propagation delay. Bussing. Memory elements: latches and flip-flops; timing: setup and hold time; registers; counters. Implementation in standard cells, programmable logic, PLD, and FPGA. Use of Mentor Graphic Design Architect in conjunction with XILINX. (Also listed as ELEN 21.) *Prerequisite: COEN 11 (may be taken concurrently); co-requisite: COEN 21L.* (4 units)

21L. Logic Design Lab

Laboratory for COEN 21. (Also listed as ELEN 21L.) *Co-requisite: COEN 21.* (1 unit)

44. Applied Programming

Introduction to computer operating systems. Elements of computer programming in FORTRAN, including input/output, branching and loops, structured programming, programming for computational efficiency. Programming of elementary mathematical operations. Applications to engineering problems. *Co-requisites: Math 21 and CENG 41.* (4 units)

70. Formal Specification and Advanced Data Structures

Specification, representation, implementation, and validation of advanced data structures. Object-oriented design and programming in a strongly typed language (Ada 95) with emphasis on reliable reusable software. Formal specification of advanced data structures (graphs, sets, bags, tables, environments, "fancy" trees). Informal use of specifications to guide implementation and validation of programs. Values vs. objects and implications for implementation (copying vs. sharing, equality vs. identity, encapsulation). Guidelines and practice in designing for and with reuse. *Prerequisite: COEN 7 or Math 61; knowledge of object-oriented programmed assumed.* (4 units)

UPPER-DIVISION COURSES

120. Microprocessor-based Design

Overview of microprocessor organization, hardware-software tradeoffs. Survey of microprocessor architectures and assembly languages, LSI memory chips, memory section design, parallel and serial interfaces, interrupts, DMA channels, microcomputer development systems. (Also listed as ELEN 120.) *Prerequisite: COEN 21; co-requisite: COEN 120L.* (4 units)

120L. Microprocessor Laboratory

Laboratory for COEN 120. (Also listed as ELEN 120L.) *Co-requisite: COEN 120.* (1 unit)

122. Computer Architecture

Overview of computer systems, CPU design, computer arithmetic, instruction set architectures, pipelining, microprogramming techniques, memory hierarchies and management, input/output subsystem organization, hardware description languages. Laboratory project consists of a design of a CPU. (Also listed as ELEN 122.) *Prerequisite: COEN 120.* (5 units)

127. Advanced Logic Design

Contemporary design of finite-state machines as system controllers using MSI, PLDs, or FPGA devices. Minimization techniques, performance analysis, and modular system design. Design and analysis of asynchronous systems. (Also listed as ELEN 127.) *Prerequisite: COEN 21; co-requisite: COEN 127L.* (4 units)

127L. Advanced Logic Design Lab

Laboratory for COEN 127. Design, construction, and testing of controllers from verbal specs. Use of CAD design tools. (Also listed as ELEN 127L.) *Co-requisite: COEN 127.* (1 unit)

129. Current Topics in Computer Engineering

Subjects of current interest. May be taken more than once if topics differ. (4 units)

133. Digital Signal Processing

Description of discrete signals and systems. Difference equations. Convolution summation. Z-transform, transfer function, system response, stability. Discrete Fourier transform. Frequency characteristics. Digital filter design. State-space design. Laboratory. (Also listed as ELEN 133.) *Prerequisite: ELEN 110.* May be taken for graduate credit up to 12 units. (5 units)

134. Applications of Digital Signal Processing

Fast Fourier Transform (FFT), Radix-2 DIT and DIF algorithms. Fast convolution using FFT. Other FFT applications. Other algorithms for computing DFT. Design and analysis of digital filters. Applications of DSP in DTMF generation and decoding. Introduction to statistical signal processing. Applications of DSP in telecommunications. Includes Pulse Code Modulation (PCM), ADPCM, ADM, etc. Companding (μ-law and A-law), telephone networks, modems, etc. Applications of DSP in audio systems, compact disc technology, Dolby noise reduction, etc. Digital processing of speech. Introduction to digital image processing. Introduction to adaptive signal processing/artificial neural networks. Hands-on laboratory for real-time DSP processing using TMS320C30, MATLAB, and Comdisco's SPW applications. (Also listed as ELEN 134.) *Prerequisite: COEN 133; knowledge of ELEN 141 is a plus.* (4 units)

145. Introduction to Parallel Programming

Introduction to parallel processing. Typical multiprocessor architecture models (block level structures). Performance measurement and evaluation of parallel algorithms. Shared-memory parallel programming. Message-passing parallel programming. Data parallel programming. Parallelizing sequential code. Case studies on application algorithms. *Prerequisites:COEN 120*

and COEN 7 or Math 61; knowledge of C recommended. (5 units)

146. Computer Networks

The ISO Open Systems Interconnect model. Data communications issues. Circuit and packet switching. Media access control protocols for shared channels: ALOHA and its derivatives, CSMA, CSMA/CD, token bus and ring, other protocols. Error detection and recovery. Sliding window techniques. Routing algorithms. Flow control. TCP/IP, Client/Server model. Network analysis techniques. Queuing systems, throughput-delay analysis. Laboratory consists of projects on software development of network protocols and applications. *Prerequisites: COEN 120, AMTH 108, and COEN 7 or Math 61; knowledge of C recommended.* (5 units)

148. Computer Graphics Systems

Interactive graphic systems. Graphics primitives, line and shape generation. Simple transforming and modeling. Efficiency analysis and modular design. Interactive input techniques. 3D transformations and viewing, hidden surface removal. Color graphics, animation, real-time display considerations. Parametric surface definition and introduction to shaded-surface algorithms. Offered in alternate years. *Prerequisites: Math 53 and COEN 7 or Math 61.* (5 units)

153. Digital Integrated Circuit Design

Analysis and design of digital MOS and bipolar integrated circuits. Based on first-order nonlinear device models, hand calculations and computer simulations (SPICE) used to design gates and SSIs. Circuit modeling considerations. Circuit performance evaluation with computer-aided circuit analysis. Design of MSIs from flowchart to layout. PLAs and finite state machines using array logic. Introduction to system design. (Also listed as ELEN 153.) *Prerequisites: ELEN 115 and COEN 21.* (5 units)

171. Principles of Design and Implementation of Programming Languages

High-level programming-language concepts and constructs. Costs of use and implementation of the constructs. Issues and trade-offs in the design and implementation of programming languages. Critical look at several modern high-level programming languages. Offered in alternate years. *Prerequisite: COEN 7 or Math 61.* (4 units)

172. Structure and Interpretation of Computer Programs

Techniques used to control complexity in the design of large software systems. Design of procedural and data abstractions; design of interfaces that enable composition of well-understood program pieces; invention of new, problem-specific languages for describing a design. Programs written and run in a dialect of LISP. Offered in alternate years. *Prerequisite: COEN 7 or Math 61.* (5 units)

173. Logic Programming

Application of logic to problem solving and programming; logic as a language for specifications, programs, databases, and queries; separation of logic and control aspects of programs; bottom-up reasoning (forward from assumptions to conclusions) versus top-down reasoning (backward from goals to subgoals) applied to problem solving and programming; nondeterminism, concurrency, and invertibility in logic programs. Programs written and run in Prolog. Offered in alternate years. *Prerequisite: COEN 7 or Math 61.* (5 units)

174. Software Engineering

Object-oriented approach to software development. Software development life cycle. Project teams, documentation, and group dynamics. Software cost estimation. Formal specification. Data modeling, object modeling, and object-oriented analysis. Object-oriented programming and design. Software testing and quality assurance. CASE tools. *Prerequisites:*

COEN 7 (C/C++), COEN 70 or permission of instructor and previous use of UNIX workstations. (5 units)

175. Introduction to Formal Language Theory and Compiler Construction

Introduction to formal language concepts: regular expressions and context-free grammars. Compiler organization and construction. Lexical analysis and implementation of scanners. Top-down and bottom-up parsing and implementation of top-down parsers. An overview of symbol table arrangement, run-time memory allocation, intermediate forms, optimization, and code generation. *Prerequisite: COEN 7 or Math 61.* (5 units)

176. Software Tools Design

The design techniques for building good software tools. The concepts of filters, pipes, files, program arguments, and other facilities that make basic tools work well together. Learning by examination and modification of existing tools. Programming assignments are required in C language running under a UNIX environment. *Prerequisites: programming in C/C++, COEN 7 or Math 61, and previous use of UNIX workstations.* (5 units)

177. Operating Systems

Introduction to organization of operating systems. Management of memory, processors, and other system resources; buffering: overlapping I/O and CPU processes, reducing rotational latency. Deadlock problems and avoidance. Process interaction and communication. Sharing and protection of processes and data. File systems: directory structure, file layout, data space management. Implementation considerations. *Prerequisites: COEN 11 and either COEN 7 or Math 61; knowledge of C recommended.* (5 units)

178. Introduction to Database Systems

File organization: B trees, B^+ trees, ISAM. Hierarchical, network, and relational data models. Database design techniques based on integrity constraints and normalization. Database languages; protection, backup, and recovery; concurrency control. *Prerequisite: COEN 7 or Math 61.* NCX† (5 units)

179. Theory of Algorithms

Preliminaries: measuring work done by algorithms. Nonnumerical algorithms: searching, sorting, graph spanning and traversal, string matching. Numerical topics: polynomial and matrix arithmetic. P and NP completeness. (Also listed as Math 163.) *Prerequisites: COEN 19 or Math 52, and COEN 7 or Math 61.* (4 units)

180. Introduction to Information Storage

Storage techniques and mass storage devices. Use of memory in computer systems. Design of semiconductor, magnetic and optical (disk drives), and magnetic tape memories. Storage controllers, computer interfaces, system software interfaces. Emphasis on current mass storage devices and interfaces: SCSI, IPI, ST506, ESDI. (Also listed as ELEN 180.) *Prerequisites: COEN 11 and 21; COEN 122 recommended.* (4 units)

188. Co-op Education

Integration of classroom study and practical experience in a planned program designed to give students practical work experience relating to their academic field of study and career objectives. Alternate or parallel periods of classroom study with periods of training in industry and government. Work includes overall report on assignment activities. P/NP grading. May be taken twice. May not be taken for graduate credit. Additional fees required. (2 units)

189. Co-op Technical Report

Credit given for a technical report on a specific activity such as a design or a research project, etc., after completing the co-op assignment. Approval of department adviser required. Letter grades based on content and quality of report.

† Exempted from challenge

May be taken twice. May not be taken for graduate credit. (2 units)

194. Design Project I

Specification of an engineering project, selected with the mutual agreement of the student and the project adviser. Complete initial design with sufficient detail to estimate the effectiveness of the project. Initial draft of the project report. *Prerequisite: English 182.* (2 units)

195. Design Project II

Continued design and construction of the project, system, or device. Initial draft of project report. *Prerequisite: COEN 194.* (2 units)

196. Design Project III

Continued design and construction of the project, system, or device. Final report. *Prerequisite: COEN 195.* (2 units)

199. Independent Study

Open to department scholars only. (1–6 units)

DEPARTMENT OF ELECTRICAL ENGINEERING

Professors Emeriti: Shu-Park Chan, Henry P. Nettesheim
Professors: Timothy J. Healy, Samiha Mourad, Dragoslav D. Siljak, Sally L. Wood *(Chair)*, Cary Y. Yang, Raymond B. Yarbrough
Associate Professors: Tokunbo Ogunfunmi, M. Mahmudur Rahman
Assistant Professor: Aleksandar Zecevic
Adjunct Professor and Director, Institute for Information Storage Technology: Albert S. Hoagland
Senior Lecturer: Donald P. Leach
Thomas J. Bannan Professor: Timothy J. Healy
Benjamin and Mae Swig Professor: Dragoslav D. Siljak

Electrical engineering includes the design, construction, and operation of electrical components, circuits, and systems. Electrical engineers are concerned with all phases of the electrical transmission of information such as in radio, television, telephone systems, fiber optics, wireless communication, satellite communication, and electric power. Data processing and data storage equipment, computers and networks used by business, industry, and government are included in their major area of interest.

The Electrical Engineering Program is supported by the facilities of the University's Academic Computing Center, as well as seven major teaching and research laboratories and three additional laboratories used only for teaching. The principal computers for the University's academic functions include a Digital Equipment Corporation AlphaServer/275 and six personal computer laboratories with more than 200 Macintoshes and IBM PCs. In addition, the School of Engineering has a large number of workstations from Hewlett-Packard, as well as from Sun and Silicon Graphics. The Engineering Design Center, one of the most sophisticated and modern undergraduate teaching facilities in the world, has a network of more than 70 HP 9000 high-end workstations and X-terminals with design and simulation software.

Laboratories are an important component of most undergraduate courses. Use of appropriate laboratory equipment and components both demonstrates fundamental concepts of the courses and acquaints students with facilities they may use after graduation. The three teaching laboratories cover the fields of electric circuits, electronic circuits, and logic design. The following research and teaching laboratories are used in the undergraduate program:

Electrical Engineering Laboratories

The *ASIC Testing Laboratory* (ATL) supports research conducted by graduate students from the Electrical Engineering and Computer Engineering departments. Computer-aided testing packages from industry and the public domain are used in such projects as fault analysis on the device level, functional testability measures, partitioning HDL models for testability, and rapid prototyping using field programmable gate arrays (FPGAs).

The *Digital Systems Laboratory* (operated jointly with the Computer Engineering Department) provides complete facilities for experiments and projects ranging in complexity from a few digital integrated circuits and other electronic components to complete computer systems. It includes a variety of development systems to support microprocessor-based design, VLSI design, and other computer design projects. It also holds facilities to support digital signal processing projects.

The *Intelligent Control Laboratory* includes two IBM robotic arm systems and several servo-experimenters with computer support systems.

The *Microelectronics Laboratory* provides teaching and research facilities for semiconductor devices and integrated circuit design, fabrication, and characterization. Ongoing research topics include silicon heterostructures, thin dielectrics, and high-temperature superconductors on silicon devices.

The *Microwave and Communications Laboratory* provides a full range of modern measurement capability from 0–22 GHz, including a number of automatic network analyzers and modern spectrum analyzers. It also has extensive computer-aided design and simulation capability, based largely on modern commercial software running on workstations. Interconnection of hardware measurements and computer simulation is stressed.

The *Signal and Image Processing Laboratory* is used primarily for graduate research. It has a Sun SPARC server 630 and SPARC workstations. Texas Instruments TMS320 systems are used for real-time signal processing. Research areas include theoretical issues in image processing, image analysis, three-dimensional modeling from two-dimensional data, adaptive signal processing, artificial neural networks, and nonlinear signal processing. Applications include medical image analysis, two- and three-dimensional image reconstruction, passive navigation for robotic vision, and VLSI implementations of adaptive signal processing.

The *Storage Technology Laboratory* is used primarily for graduate research, although senior projects are encouraged and supported. Facilities include a separate laboratory area with a state-of-the-art Guzik test stand and associated instrumentation for high-density magnetic head and disk studies with capabilities to digitize readback signals and utilize them to evaluate simulation models of the

recording channel; an HP 750 workstation linked to the School of Engineering Design Center; and advanced computers and software. Research areas include: studies on novel silicon planar heads; advanced recording channels based on digital signal processing such as PRML; and the high-date disk-drive architectures that are envisaged with the growth of multimedia applications. The laboratory is part of an Industry/University Consortium that is pursuing government-funded research to achieve 10-GB/square-inch recording densities by the end of the decade. Research is being pursued as part of this program.

LOWER-DIVISION COURSES

10. Introduction to Electrical Engineering

Introduction to fundamental concepts of electrical engineering: communications, control, computers, and electronics. Basic concepts presented in the context of current practice, such as digital audio, television, robotics, and integrated circuits. Introduction to MATLAB. Includes interactive demonstrations and projects. (4 units)

21. Introduction to Logic Design

Boolean functions and their minimization. Designing combinational circuits, adders, multipliers, multiplexers, decoders. Noise margin, propagation delay. Bussing. Memory elements: latches and flip-flops; timing: setup and hold time; registers; counters. Implementation in standard cells, programmable logic, PLD, and FPGA. Use of Mentor Graphic Design Architect in conjunction with XILINX. (Also listed as COEN 21.) *Co-requisite: ELEN 21L.* (4 units)

21L. Logic Design Lab

Laboratory for ELEN 21. (Also listed as COEN 21L.) *Co-requisite: ELEN 21.* (1 unit)

33. Introduction to Digital Signal Processing Systems

Overview of processor architectures for general purpose processors and signal processing microprocessors; data representation in fixed point, floating point, μ law and A law; instruction sets; assembly and machine language programming; real-time audio data acquisition and output; introduction to sample data systems. Analog to digital converters and digital to analog converters. *Prerequisite: ELEN 21.* (4 units)

50. Electric Circuits I

Physical basis and mathematical models of circuit components and energy sources. Circuit theorems and methods of analysis are applied to DC and AC circuits. Laboratory. *Prerequisite: Physics 6; co-requisite: AMTH 106.* (5 units)

UPPER-DIVISION COURSES

100. Electric Circuits II

Continuation of ELEN 50, including sinusoidal steady state and phasors, transformers, three-phase circuits, resonance, Laplace analysis, transfer functions. Fourier series. Laboratory. *Prerequisite: ELEN 50 or Physics 70.* (5 units)

104. Electromagnetics I

Static electric and magnetic fields and their sources and effects, including potential theory and the laws of Coulomb, Lorentz, Faraday, and Gauss. Introduction to vector analysis and differential operators. Dielectric and magnetic materials, capacitance and inductance, energy in magnetic and electric fields, solutions to

the Poisson equation. *Prerequisites: Physics 6 and ELEN 50; co-requisite: ELEN 100.* (5 units)

105. Electromagnetics II

Time harmonic electromagnetic fields. Introduction to complex vector operations. Maxwell's equations and the laws of Faraday and Gauss. Conservation of charge and power, Poynting vectors. Helmholtz wave equation, wave propagation. Boundary conditions and wave reflection and propagation, Snell's law. Transmission line theory, introduction to the Smith chart. Waveguides and radiation. *Prerequisite: ELEN 104 or Physics 111.* (5 units)

107. Information Storage Technology

Emphasis on magnetic data storage; technology, devices, and systems. Overview of alternative technologies. The recording process and electromechanical design trade-offs of moving media storage systems. Challenges faced in securing continuing cost/performance advances in terms of cost/bit, access time, transfer data rate, and reliability. May be taken for graduate credit up to 12 units. *Prerequisites: ELEN 104 or Physics 111, and ELEN 180.* (4 units)

110. Linear Systems

Signals and system modeling. Laplace transform. Transfer function. Convolution. Discrete systems and Z-transform. Frequency analysis. Fourier series and transform. Filtering. Problem sessions. *Prerequisite: ELEN 100.* (5 units)

111. Analysis of Linear Systems and Applications

Review of matrix/linear algebra. Matrix foundation of system equations. Introduction to state-space description of systems. Frequency response techniques. Discrete systems and Z-transform techniques. Discrete Fourier Transform (DFT). Fast Fourier Transform (FFT). Introduction to MATLAB as a tool. Problem solving with MATLAB with examples. Numerical solution of both differential and difference equations. Writing structured programming using C/MATLAB. *Prerequisite: ELEN 110.* (4 units)

112. Modern Network Synthesis and Design

Approximation, synthesis of passive one-port and two-port networks, linear operational amplifiers and active R-C synthesis. Nonlinear operational amplifiers: phase-locked loops, waveform generation. Design project. May be taken for graduate credit up to 12 units. *Prerequisite: ELEN 110.* (5 units)

114. Introduction to Topological Analysis

Introduction to topological analysis of linear networks and systems. Elementary network topology; planarity and duality; topological analysis of linear one-ports and two-ports; symbolic functions and sensitivity analysis; computer-aided topological analysis and optimization; introduction to topological synthesis and design. *Prerequisite: ELEN 100.* (4 units)

115. Electronic Circuits I

The p-n junction diodes, bipolar junction transistors (BJT), junction field effect transistors (JFET), metal-oxide-silicon field effect transistors (MOSFET). Study of physical behavior, modes of operation, terminal characteristics, and equivalent circuit models for each of these devices. Emphasis on using simplified models to perform rapid circuit analysis for a number of basic circuit configurations. Primary objectives: knowledge of the single transistor switch and the single transistor analog amplifier. *Prerequisite: ELEN 50.* (5 units)

116. Electronic Circuits II

Analog amplifiers. Differential amplifier using BJTs and MOSFETs. Amplifier output stages and integrated circuit (IC) power amplifiers. Detailed consideration of amplifier frequency response and wide-band amplifier configurations. Practical

circuit applications using negative feedback to enhance amplifier performances. Topics combined in the study of multistage (multitransistor) amplifier circuits. *Prerequisite: ELEN 115.* (5 units)

117. Electronic Circuits III

Introduction to BJT and MOSFET analog ICs. Detailed study of the popular 741 Operational Amplifier (OA), digital circuits and systems, as well as VLSI circuit design. Numerous specialized circuits including tuned amplifiers, oscillators and precision circuits using OAs. Detailed consideration of the internal operation of BJT and MOS digital circuits. *Prerequisite: ELEN 116.* (5 units)

119. Current Topics in Electrical Engineering

Subjects of current interest. May be taken more than once if topics differ. (4 units)

120. Microprocessor-Based Design

Overview of microprocessor organization, hardware-software trade-offs. Survey of microprocessor architectures and assembly languages, LSI memory chips, memory section design, parallel and serial interfaces, interrupts, DMA channels, microcomputer development systems. (Also listed as COEN 120.) *Prerequisite: ELEN 21; co-requisite: ELEN 120L.* (4 units)

120L. Microprocessor Laboratory

Laboratory for ELEN 120. (Also listed as COEN 120L.) *Co-requisite: ELEN 120.* (1 unit)

122. Computer Architecture

Overview of computer systems, computer arithmetic, instruction set architecture, pipelining, microprogramming techniques, memory hierarchies and management, input/output subsystem organization. Laboratory project consists of a design of a CPU. (Also listed as COEN 122.) *Prerequisite: ELEN 120.* (5 units)

127. Advanced Logic Design

Contemporary design of finite-state machines as system controllers using MSI, PLDs, or FPGA devices. Minimization techniques, performance analysis, and modular system design. Design and analysis of asynchronous systems. (Also listed as COEN 127.) *Prerequisite: ELEN 21; co-requisite: ELEN 127L.* (4 units)

127L. Advanced Logic Design Lab

Laboratory for ELEN 127. Design, construction, and testing of controllers from verbal specs. Use of CAD design tools. (Also listed as COEN 127L.) *Co-requisite: ELEN 127.* (1 unit)

130. System Control and Design

Descriptions of control systems. The principle of feedback. Performance specifications: transient and steady-state response. Stability: Routh-Hurwitz test. Design methods. Root-locus. Frequency response techniques of Nyquist, Bode, and Nichols. Lead and lag controller design. Laboratory. May be taken for graduate credit up to 12 units. *Prerequisite: ELEN 110.* (5 units)

131. Introduction to Robotics

Overview of robotics: control, AI, and computer vision. Components and structure of robots. Kinematics and dynamics of robot manipulators. Servo-control design, PID control. Trajectory planning, obstacle avoidance. Sensing and vision. Robot intelligence and task planning. Laboratory. *Prerequisite: ELEN 110.* (5 units)

133. Digital Signal Processing

Description of discrete signals and systems. Difference equations. Convolution summation. Z-transform, transfer function, system response, stability. Digital filter design and implementation. Introduction to C language implementations. Frequency domain analysis. Discrete Fourier transform and FFT. Laboratory for real-time processing. (Also listed as COEN 133.) May be taken for graduate

credit up to 12 units. *Prerequisite: ELEN 110.* (5 units)

134. Applications of Digital Signal Processing

Fast Fourier Transform (FFT), Radix-2 DIT and DIF algorithms. Fast convolution using FFT. Other FFT applications. Other algorithms for computing DFT. Design and analysis of digital filters. Applications of DSP in DTMF generation and decoding. Introduction to statistical signal processing. Applications of DSP in telecommunications. Includes Pulse Code Modulation (PCM), ADPCM, ADM, etc. Companding (μ-law and A-law), telephone networks, modems, etc. Applications of DSP in audio systems, compact disc technology, Dolby noise reduction, etc. Digital processing of speech. Introduction to digital image processing. Introduction to adaptive signal processing/artificial neural networks. Hands-on laboratory for real-time DSP processing using TMS320C30, MATLAB, and Comdisco's SPW applications. (Also listed as COEN 134.) May be taken for graduate credit up to 12 units. *Prerequisite: ELEN 133; knowledge of ELEN 141 is a plus.* (4 units).

139. Special Topics in Signals and Systems

Subjects of current interest. May be taken more than once if topics differ. (4 units)

141. Communication Systems

Signal description; Fourier transforms; filtering; noise description; linear, exponential, and pulse modulation and demodulation. Amplitude and frequency modulation. Laboratory. May be taken for graduate credit up to 12 units. *Prerequisite: ELEN 110.* (5 units)

144. RF and Microwave Components

Passive and active electrical components used in radio frequency and microwave circuits. Emphasis on fundamental characterization of components. Parasitics, models, and measurements. Resistors, inductors, capacitors, transmission lines, diodes, transistors. May be taken for graduate credit up to 12 units. *Prerequisite: ELEN 105.* (5 units)

151. Semiconductor Devices I

Materials properties, crystal structure, and band structure of semiconductors. Carrier statistics and transport; p-n junction statics, I-V characteristics, equivalent circuits, and switching response. Metal-semiconductor contacts, Schottky diodes. Metal-semiconductor field-effect transistors, junction field-effect transistors. Laboratory. *Prerequisite: ELEN 104.* (5 units)

152. Semiconductor Devices II

Metal-oxide-semiconductor field-effect transistors, bipolar junction transistors, heterojunctions. Principles of silicon IC fabrication processes and design. Bulk and epitaxial crystal growth, thermal oxidation, diffusion, ion implantation. Process simulation for basic devices. *Prerequisite: ELEN 151.* (5 units)

153. Digital Integrated Circuit Design

Analysis and design of digital MOS and bipolar integrated circuits. Based on first-order nonlinear device models, hand calculations and computer simulations (SPICE) used to design gates and SSIs. Circuit modeling considerations. Circuit performance evaluation with computer-aided circuit analysis. Design of MSIs from flowchart to layout. PLAs and finite state machines using array logic. Introduction to system design. (Also listed as COEN 153.) May be taken for graduate credit up to 12 units. *Prerequisites: ELEN 21 and 115.* (5 units)

154. Integrated Circuit Fabrication and Characterization

Principles and practice of IC fabrication and characterization of basic semiconductor devices with experiments on oxidation, diffusion, ion implantation, lithography, etching and cleaning, metallization, film deposition, process simulation, process integration, and parameter extrac-

tion. Conducted in the Microelectronics Laboratory clean-room facility. Course consists of two hours lecture and two 3-hour labs per week. May be taken for graduate credit up to 12 units. *Prerequisite: ELEN 152. Must be continued with ELEN 155.* (3 units)

155. Integrated Circuit Fabrication and Characterization II

Continuation of ELEN 154. Integrated circuit fabrication and characterization. Includes writing of technical reports on experiments performed in ELEN 154. May be taken for graduate credit up to 12 units. *Prerequisite: ELEN 154.* (2 units)

164. Introduction to Power Electronics

Development of models utilizing semiconductor materials used in high-current and/or high-voltage applications. Models include DC to DC converters, AC to DC converters, and DC to AC inverters. Analysis of power amplifiers. SPICE implementations of models. May be taken for graduate credit up to 12 units. *Prerequisite: ELEN 115.* (3 units)

180. Introduction to Information Storage

Storage techniques and mass storage devices. Use of memory in computer systems. Design of semiconductor, magnetic and optical (disk drives), and magnetic tape memories. Storage controllers, computer interfaces, system software interfaces. Emphasis on current mass storage devices and interfaces: SCSI, IPI, ST506, ESDI. (Also listed as COEN 180.) *Prerequisites: COEN 11 and ELEN 21; ELEN 122 recommended.* (4 units)

188. Co-op Education

Integration of classroom study and practical experience in a planned program designed to give students practical work experience relating to their academic field of study and career objectives. Alternate or parallel periods of classroom study with periods of training in industry and government. Work includes overall report on assignment activities. P/NP grading. May be taken twice. May be taken for graduate credit. Additional fees required. (2 units)

189. Co-op Technical Report

Credit given for a technical report on a specific activity such as a design or a research project, etc., after completing the co-op assignment. Approval of department co-op adviser required. Letter grades based on content and presentation quality of report. May be taken twice. May be taken for graduate credit. (2 units)

194. Design Project I

Specification of an engineering project, selected with the mutual agreement of the student and the project adviser. Complete initial design with sufficient detail to estimate the effectiveness of the project. Initial draft of the project report. *Prerequisite: English 182.* (2 units)

195. Design Project II

Continued design and construction of the project, system, or device. Second draft of project report. *Prerequisite: ELEN 194.* (2 units)

196. Design Project III

Continued design and construction of the project, system, or device. Final report. *Prerequisite: ELEN 195.* (2 units)

199. Independent Study

Open to department scholars only. (1–6 units)

DEPARTMENT OF MECHANICAL ENGINEERING

Professors Emeriti: Eugene J. Fisher, R. Ian Murray, Richard K. Pefley
Professors: Mark D. Ardema *(Chair)*, Michel A. Saad, Terry E. Shoup
Associate Professors: Timothy K. Hight, Lee E. Hornberger
Assistant Professor: James M. Donohue
Adjunct Professors: Joseph T. Ma, P. K. Menon, Kung C. Wu
John M. Sobrato Professor: Terry E. Shoup
David Packard Fellow: James M. Donohue

Mechanical engineering includes all aspects of design, development, control, and manufacture of mechanical systems and energy conversion systems. The undergraduate curriculum addresses the education and training of mechanical engineering students and concentrates on two technical areas: (1) design and analysis of thermofluid systems for effective use of energy; and (2) design, analysis, and control of mechanical systems including the study of materials used in engineering. Educational efforts are channeled to expand the skills of prospective engineers not only in understanding fundamentals but also in developing competence in analyzing engineering systems.

Mechanical Engineering Laboratories

The *Mechanical Engineering Laboratories* contain facilities for instruction and research in the fields of fluid mechanics, thermodynamics, heat and mass transfer, propulsion, combustion, power generation, shock and vibration, instrumentation, control systems, and materials science and manufacturing.

A variety of internal combustion engines installed on dynamometer stands can be used for studies in diesel and spark-ignition engines. The facilities include instrumentation for evaluating engine performance, measuring exhaust pollutants, and measuring noise. Engine studies can be conducted using a variety of fuels.

The fluid dynamics facilities contain equipment to illustrate the principles of fluid flow and to familiarize students with hydraulic machines and their associated instrumentation. Each device may be supplied from a pump or from a constant-level standpipe with a 25-foot head. A subsonic wind tunnel equipped with an axial flow fan with adjustable blades is available to conduct experiments in aerodynamics and turbomachinery.

The *Plastics Recycling Laboratory* contains a variety of plastics-processing and test equipment for forming and analyzing recycled plastic materials and products. This lab contains a materials grinder, Morgan Press molding machine, melt indexer, APS impact tester, Instron tensile tester, differential scanning calorimeter, thermogravimetric analyzer, and dynamic mechanical analyzer.

Included also in the Mechanical Engineering Laboratories is equipment to study electromechanical energy conversion and response and control of mechanical systems. The metallurgy laboratory features a modern scanning electron microscope that is used to familiarize students with properties of materials. The machine shop is equipped with manual mills, lathes, and a Haas CNC mill for student instruction, construction of experimental devices, and student projects.

There is also an *Optics Laboratory* with a He-Ne laser for holographic measurement.

LOWER-DIVISION COURSES

10. Introduction to Engineering Graphics

Principles of orthographic projection, dimensioning, sectioning; isometric and auxiliary views. Descriptive geometry applied to representation and visualization. Computer-aided design using engineering workstations. (4 units)

11. Materials and Manufacturing Processes

Material properties and changes of these properties during processing. Manufacturing processes and their use to produce various mechanical items. Laboratory. (5 units)

15. Introduction to Material Science

Physical basis of the electrical, mechanical, and thermal behavior of solids. Relations between structural and physical properties. Theory of dislocations, vacancies, and other defects and their effect on physical properties. Illustrations of the relationship of material selection to manufacturing processes and design. Laboratory. *Prerequisites: MECH 11, Chemistry 5, and Physics 6.* (5 units)

UPPER-DIVISION COURSES

114. Machine Design I

Decision making in the solution of problems. Stress and deflection analysis are emphasized in the first part of the course; strength criteria are considered in the second part. One or two open-ended design projects. *Prerequisites: MECH 15 and CENG 43.* (4 units)

115. Machine Design II

Continuation of MECH 114. The solution of practical mechanical design problems. Design of components to withstand static and fatigue loading. *Prerequisite: MECH 114.* (4 units)

121. Thermodynamics I

Properties of pure substances. Work and heat. First and second laws of thermodynamics. Application to fixed mass systems and control volumes. Irreversibility and availability. *Prerequisite: Physics 6.* (4 units)

122. Fluid Mechanics I

Fluid properties and definitions. Fluid statics, forces on submerged surfaces, manometry. Streamlines and the description of flow fields. Euler's and Bernoulli's equations. Mass, momentum, and energy analysis with a control volume. Laminar and turbulent flows. Losses in pipes and ducts. Dimensional analysis and similitude. Laboratory. *Prerequisite: MECH 140.* (5 units)

123. Heat Transfer

Introduction to the concepts of conduction, convection, and radiation heat transfer. Application of these concepts to engineering problems. *Prerequisites: MECH 121 and 122.* (4 units)

131. Thermodynamics II

Thermodynamic potentials and availability concepts. Thermodynamic cycles. Nonreactive mixtures. Reactive mixtures with emphasis on the thermodynamics of

combustion and chemical equilibrium. Laboratory. *Prerequisite: MECH 121.* (5 units)

132. Fluid Mechanics II

Introduction to gas dynamics. Concepts of lift and drag. Mechanics of laminar and turbulent flow. Introduction to boundary-layer theory. Application to selected topics in lubrication theory, aerodynamics, turbomachinery, and pipe networks. Offered every other year. *Prerequisites: MECH 121 and 122.* (4 units)

140. Dynamic Systems I

Newtonian dynamics of rigid bodies. Kinematics of points and reference frames. Motion relative to noninertial frames. Linear and angular momentum. Newton's laws of motion. Moments and products of inertia. Work and energy methods. Impulse and momentum. *Prerequisites: Physics 4, AMTH 106, and MECH 10.* (4 units)

141. Dynamic Systems II

Fixed-axis rotation, gyroscopic motion. Fundamental characteristics of linear systems via analysis of simple electrical and mechanical models. Forced and natural response. Mechanical vibrations, circuit analysis, and electromechanical systems. Laboratory. *Prerequisite: MECH 140.* (5 units)

142. Dynamic Systems III

Modeling of physical systems. Analysis of linear feedback control systems by classical methods. Synthesis and design of control systems that satisfy certain stability and time-response criteria. Introduction to analysis and design by state-space methods. *Prerequisite: MECH 141.* (4 units)

143. Electromechnical Systems and Components

Machine dynamics, transfer functions, and modeling of physical electromechanical systems. Applications and laboratory. Offered every other year. *Prerequisites: MECH 142 and ELEN 50.* (4 units)

145. Introduction to Aeronautical Engineering

Basic design and analysis of atmospheric flight vehicles. Principles of aerodynamics, propulsion, structures and materials, flight dynamics, stability and control, mission analysis, and performance estimation. Conceptual and preliminary design of various aircraft. Offered every other year. *Prerequisites: MECH 121, 122, and 140.* (4 units)

151. Finite Element Theory and Applications

Basic introduction to finite elements; direct and variational basis for the governing equations; elements and interpolating functions. Applications to general field problems—elasticity, fluid mechanics, and heat transfer. Extensive use of software packages. Offered every other year. *Prerequisites: COEN 4 or 44 and AMTH 106.* (4 units)

160. Modern Instrumentation for Engineers

Introduction to design of experiments, instrumentation, data acquisition, error analysis, and report writing. *Prerequisites: MECH 122 and senior standing.* (4 units)

188. Co-op Education

Integration of classroom study and practical experience in a planned program designed to give students practical work experience relating to their academic field of study and career objectives. Alternate or parallel periods of classroom study with periods of training in industry and government. Work includes overall report on assignment activities. P/NP grading. May be taken twice. May be taken for graduate credit. Additional fees required. (2 units)

189. Co-op Technical Report

Credit given for a technical report on a specific activity such as a design or a research project, etc., after completing the co-op assignment. Approval of department co-op adviser required. Letter grades based on content and presentation quality of report. May be taken twice. May be taken for graduate credit. (2 units)

190. Independent Study

Investigation of a mechanical engineering problem and presentation of the results. Arrangement with a faculty adviser is required. *Prerequisite: senior standing.* (2–4 units)

194. Advanced Design I: Tools

Design tools basic to all aspects of mechanical engineering, including design methodology, computer-design tools. CAD, finite element method, simulation, CAM/robotics, engineering economics, and decision making. Senior design projects begun. Elements of technical writing. *Prerequisite: MECH 115.* (4 units)

195. Advanced Design II: Implementation

Implementation of design strategy. Detail design and fabrication of senior design projects. Quality control, testing and evaluation, standards and specifications, and human factors. *Prerequisite: MECH 194.* (4 units)

196. Advanced Design III: Completion and Evaluation

Design projects completed, assembled, tested, evaluated, and judged with opportunities for detailed re-evaluation by the designers. Elements of technical writing. Final written report required. *Prerequisites: MECH 195 and English 182.* (4 units)

199. Directed Research

Investigation of an engineering problem and writing an acceptable thesis. Conferences as required. *Prerequisite: senior standing.* (2–4 units)

8

Division of Counseling Psychology and Education

Professor Emeritus: Brian P. Hall
Professors: Ruth E. Cook *(Division Director),* Jerrold L. Shapiro
Associate Professors: Jerome A. Kroth, Dale G. Larson, Jo Ann Vasquez, William W. Yabroff
Assistant Professors: Sara Soledad Garcia, Pia Moriarty, Teri Quatman, MaryAnne Wakefield
Lecturers: Steve A. Johnson, S.M., Lee Mahon

TEACHER EDUCATION AT SANTA CLARA

Santa Clara University is accredited by the California Commission on Teacher Credentialing to offer professional preparation for prospective elementary school and junior and senior high school teachers. The Teacher Education programs at Santa Clara consist of the Multiple-Subject Credential (elementary grades) and the Single-Subject Credential (junior and senior high school levels), with an optional CLAD (Cross-Cultural, Language, and Academic Development) emphasis. These credential programs provide extensive experience in schools as well as a diversified course of study in educational theory and practice. The Basic Teaching Credential Program (multiple-subject or single-subject) can be completed as a fifth year of graduate study or as part of the four-year baccalaureate program.

Other credential programs offered by the Division of Counseling Psychology and Education include a Learning Handicapped Specialist Credential, a Resource Specialist Certificate, and an Administrative Services Credential. Some credentials require first obtaining a basic teaching credential. The California Preparation and Licensing Law of 1970 (commonly referred to as the Ryan Act), the Hughes-Hart Reform Act of 1983 (SB-813), and the Teacher Education Bergeson Act of 1988 (SB-148) guide policy in teacher preparation at Santa Clara.

Dr. Sara Garcia, Division of Counseling Psychology and Education, is director of Teacher Education. Dr. Ruth Cook is the director of Special Education programs. Drs. Garcia and Cook can be contacted through 226 Bannan Hall.

UNDERGRADUATE PREPARATION FOR TEACHING CAREERS

Preparation for Multiple-Subject Credential Program

Students interested in a career in elementary school teaching should fulfill the requirements of the liberal studies major in the College of Arts and Sciences. For specific course requirements, see Liberal Studies in this bulletin or contact the coordinator, Nedra G. Shunk, Liberal Studies Program. Students who have not completed this approved program may still qualify for admission to the Multiple-Subject Credential Program by passing the Multiple-Subject Assessment for Teachers (MSAT).

Preparation for Single-Subject Credential Program

Students interested in secondary teaching of a particular subject may fulfill the requirements of approved single-subject, subject-matter preparation programs at Santa Clara. Students should talk with the appropriate advisers in English and social science (math and modern language subject-matter preparation programs are being designed). Students who do not complete one of the approved single-subject, subject-matter preparation programs, but are interested in a teaching career, are legally required to pass subject-area examinations to verify subject-area competence. Students interested in teaching a subject not listed here should contact the department chair.

California teaching credentials are available in the following subject areas: agriculture, art, business, health science,* home economics, industrial and technology education, mathematics, modern languages, music, physical education, science, and social science. Students who wish to obtain a credential in an area for which Santa Clara does not offer an approved single-subject, subject-matter preparation program must pass subject-area competency examinations in that subject.

Minimum Requirements for Multiple- and Single-Subject Credentials

The minimum requirements for each teaching credential include (1) a baccalaureate or higher degree in a subject area (not in professional education) from an accredited institution; (2) completion of an approved program of professional education, including student teaching; (3) completion of a state-approved subject-area program or passage of a subject-area competency examination (in the area one plans to teach); (4) demonstrated knowledge of the various methods of teaching reading by completion of course work or passage of an approved examination; and (5) passage of the California Basic Educational Skills Test (CBEST).

Information regarding subject-area examinations is available from the Division of Counseling Psychology and Education, 226 Bannan Hall. It is **strongly** advised that subject-area examinations be passed prior to entering the program.

A *Clear Teaching Credential* may be earned by meeting the minimum requirements plus the additional requirements of a fifth year of study; a course in health

*No examination available

education, a course in teaching children with exceptional needs in the regular classroom, approved course work in computer education, and course work or an examination on the provisions and principles of the U.S. Constitution. History 7 or 171, or Political Science 1 or 157, satisfies the U.S. Constitution requirement.

FOUR-YEAR CREDENTIAL PROGRAM

The Multiple-Subject or Single-Subject Credential Program can be taken at Santa Clara in a student's senior year. Students who complete all the University and major requirements by the end of their junior year are eligible to apply for entrance to the Teacher Education Program during their senior year. Upon graduation from Santa Clara after four years of study, these students obtain a *Preliminary Teaching Credential.* Since a *Clear Teaching Credential* requires an additional fifth year of study, these students must complete an additional 45 quarter units of an approved program within five years. Courses and requirements for four-year students and students completing a credential program in their fifth year of study are the same.

FIFTH-YEAR CREDENTIAL PROGRAM

The Multiple-Subject or Single-Subject Credential Program is generally taken as a fifth year of study following the baccalaureate and qualifies the student for a *Clear Teaching Credential.* This 47-quarter-unit (50 units for CLAD emphasis) program includes graduate course work in educational foundations, curriculum design, teaching methods, and supervised student teaching. For further information, consult the *Counseling Psychology and Education Graduate Programs* bulletin available in 226 Bannan Hall.

CLAD EMPHASIS PROGRAM

The CLAD (Cross-Cultural, Language, and Academic Development) emphasis credential focuses on the integration of language acquisition, English as a second-language methods, and culturally relevant pedagogy in all the courses in the basic teaching credential. In addition, a foundation course in First- and Second-Language Acquisition (ED 253) is required of all CLAD emphasis credential candidates. In order to be recommended for a CLAD emphasis, credential students must have two prerequisite courses in cultural studies before entering the program. These courses include, but are not limited to, ethnic studies, cultural anthropology, and social linguistics. In addition, all CLAD candidates must have a minimum of 9 quarter units of language study on their transcripts or qualify for a waiver (see CTC options for waiver from the Division's admissions director in 226 Bannan Hall).

POLICIES

1. Graduate courses taken prior to completing the BA/BS do not count toward the satisfaction of the requirements for a master's degree.

2. Undergraduates who have been admitted to the CP&E urban education minor may enroll in select post-baccalaureate courses and earn credit toward their BA/BS degree.
3. Units earned in excess of those required by Santa Clara for the BS or BA degree may be counted toward the satisfaction of state-approved teaching credential programs.

ADMISSION REQUIREMENTS

Admission requirements for the credential program are

1. an overall grade point average of 2.75, with a 3.0 in the academic major;
2. a positive attitude toward the teaching profession and its responsibilities;
3. demonstrated competence in reading, writing, and speaking English as attested to by course work, a recently written paper, or a recommendation from the applicant's major adviser or supervisor;
4. absence of criminal conviction that would preclude the issuance of a teaching credential;
5. three letters of recommendation from the following:
   a. at least one professor from the applicant's major field (preferably the applicant's major adviser)
   b. teachers who have supervised the applicant's practicum work in the elementary or secondary school
   c. employers or professional colleagues who are well acquainted with the applicant's skills in working with youth
6. evidence of successful practicum work, community service, and/or experience with children or youth groups (e.g., 98/198A or B);
7. an interview with the director of Teacher Education and other faculty members;
8. a written statement, which describes the applicant's reason for entering the teaching profession; and
9. submission of recent GRE or MAT (Miller Analogies Test) test scores and CBEST scores.

Note: It is highly recommended that applicants complete the subject-matter requirement either through an approved program or by passing subject-matter examination(s) before beginning a credential program.

Applicants to the credential program may apply any time between Feb. 1 and April 1 for admission the following September. Application forms are available from the Division of Counseling Psychology and Education, 226 Bannan Hall.

EARLY ADMISSION FOR SENIORS

Early admission to the fifth-year credential program is available to seniors who wish to apply during the fall quarter. Applications are processed as soon as the student's file is complete. Students receive early notification of admission for

the following September and are assured a place in the program. Applications are accepted any time after Oct. 1.

Since enrollment in the Teacher Education Program is limited, accepted candidates must reserve a place in the program with a $250 deposit before June 1. This nonrefundable deposit will be applied to the candidate's tuition.

EASTSIDE FUTURE TEACHERS PROJECT (EFTP)

Begun in 1995, EFTP is a program developed to attract Eastside Union High School District high school juniors and seniors into the teaching profession. It is hoped that EFTP will increase the number of underrepresented students who choose teaching as a career. Six students are chosen each year to join the program, which provides special mentoring, course work, a summer program, and practical experience related to teaching. Santa Clara University is committed to providing the selected students with these opportunities, along with the financial support needed to attend the University as an undergraduate pre-teaching major and then as a graduate student in the fifth-year credential program. For additional information, contact EFTP in the Liberal Studies Program office.

COURSE DESCRIPTIONS

The Division of Counseling Psychology and Education offers the following undergraduate courses. Consult the *Counseling Psychology and Education Graduate Programs* bulletin available in 226 Bannan Hall for a description of courses in the credential programs.

EDUCATION

50. Introduction to Community Studies

Introduction to the community-based and interdisciplinary method of community studies. *Prerequisites: Foundational courses for the minor: one course from courses fulfilling University Core Social Science requirement; two courses from among Philosophy 5, 6, 8, 9, 110, or 113, and Religious Studies 45, 46, 155, or 158.* (4 units)

70. Community Health Education

Seminar addresses current health issues, reviews a variety of health education instructional materials, and includes group activities to enhance knowledge of health issues. Designed to clear multiple- and single-subject basic teaching credentials. (4 units)

98/198A. Introduction to Elementary School Teaching: Practicum

98/198B. Introduction to Secondary School Teaching: Practicum

Opportunity to work as teacher aides in elementary and secondary classrooms. Weekly seminars and directed readings address field-related problems and issues, classroom dynamics, and curriculum. Offered each quarter. (98A/B 4 units; 198A/B 5 units)

134. Psychology of Education

Psychological principles on which effective classroom practices can be based. Human growth and development, learning theory and practice, motivation and man-

agement, effective instruction, and evaluation. Development of psychological case studies as part of the field experience. Open to sophomores. (5 units)

138. The Exceptional Child

Introduction to childhood mental retardation, learning disabilities, behavior disorders, communication (speech and language) disorders, hearing impairments, physical and health impairments, severe handicaps, and the gifted and talented. The impact of these differences compared to normal development. Visits to institutions that serve these children. Particularly applicable for students interested in careers in social work, rehabilitation, education, medicine, psychology, counseling, and parenting. (5 units)

163. Introduction to Teaching in a Multicultural Society§

Exposure to the diversity of cultures present in U.S. public schools. Alternative instructional approaches and learning styles. Discussion of issues such as bilingual/bicultural education, cross-cultural/intercultural communication, and multicultural curriculum in conjunction with field experiences in local public schools. Open to sophomores. (5 units)

COUNSELING PSYCHOLOGY

140. Psychology of Intimacy

Specifically designed to investigate the needs for, and difficulties in, finding and maintaining intimate relationships in modern culture. Using their own family backgrounds as a basis, students explore the nature, scope, and communication involved in psychological intimacy. Common blocks and fears of intimate relating are described and traced. Novel approaches to finding and keeping intimate partnerships are discussed. (5 units)

§ Course included in Ethnic Studies Program

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Other Programs

The University offers a number of special programs to complement the degree programs listed under the undergraduate schools and College. Generally interdisciplinary in nature, these programs are available to all undergraduate students. Interested students are encouraged to contact the individual program directors early in their academic career at Santa Clara.

HONORS PROGRAM

Arthur F. Liebscher, S.J. *(Director)*

The Honors Program provides a learning experience appropriate to students of exceptional talent and imagination. It offers liberal education and small, seminar-style classes, especially in the University's core requirements. It also presents opportunities for advanced, interdisciplinary learning as students pursue their chosen fields of study. The Honors Program is organized as two distinct but related levels, called simply Level I and Level II. Participation in each is open to undergraduate students from Arts and Sciences, Business, and Engineering. Successful completion of either or both levels becomes part of a student's permanent record and appears on academic transcripts issued by the University.

Level I of the Honors Program accepts first-year students for a curriculum focused around seminar courses that replace Core requirements applying to students in every field. Level I requires that students successfully complete a minimum of six Honors Program courses and achieve a cumulative GPA of 3.0 or higher within the first six quarters of their enrollment. However, it is anticipated that most students complete the Level I program during their first year. Unless exempted by the director, Level I students fulfill specific Core courses—first and second writing, religious studies, and Western Culture—through the special class sections arranged by the Honors Program. Students are strongly urged to complete the following requirements through Honors Program sections: mathematics, ethics, social sciences, and natural sciences.

High school seniors interested in admission to the Honors Program should complete the normal application process for the University and also contact the director of the Honors Program. The admissions process considers the student's academic record, application to the University, standardized test scores, and any other information the student might provide about interests, goals, or experiences. Those accepted for the program usually present a high school grade point average of 3.65 or higher and a combined SAT score of 1,320 or above. A minimum SAT verbal score of 620 is required. Interested students should realize that

these numbers assure consideration but not acceptance. Each year's class profile notable exceeds the described minimums.

The Honors Program, Level II, is open to sophomores, juniors, and seniors. Students in Level I may continue on to Level II, where they should complete four additional Honors Program courses, including a senior thesis or project. Others may apply as early as the third quarter of their first year or, in the case of transfer students, after two quarters of enrollment at Santa Clara. Prospective Level II students should contact the Honors Program and be prepared to submit academic records and one or more letters of recommendation from members of the Santa Clara faculty. Students joining the program at Level II should complete six Honors Program courses, including a thesis or senior project.

The seminars and other courses in Level II address questions or provide challenges not ordinarily encountered in major-field requirements. Typical themes include the boundaries and connections between different areas of knowledge and other interdisciplinary problems. Some Level II courses, while not interdisciplinary, offer academic opportunities especially suitable for Honors Program students.

For both continuing and new students, the thesis is usually undertaken in conjunction with the student's major. Students often complete the thesis requirement within the context of a seminar, independent-study course, or Honors Program thesis course (Honors 199).

An annual Honors Program scholarship permits one student to spend his or her junior year at Mansfield College, Oxford University. This scholarship is awarded on a competitive basis and is limited to students in the program.

Interested students should write to: Director, Honors Program, Santa Clara University, Santa Clara, CA 95053, or call 408-554-4439.

HONORS COURSES

11. Classical Culture

12. Medieval and Early Modern Culture

13. Late Modern Culture

A series of interdisciplinary seminars on Western culture from the ancient Greeks to the present. Enrollment limited to students in the Honors Program.

100. Honors Seminar

An advanced, interdisciplinary seminar on a topic of importance to liberal education. May be repeated for credit when topic changes. Enrollment limited to students in the Honors Program.

199. Honors Program Thesis

Course credit for thesis or culminating project of the Honors Program. For students who do not enroll for a thesis or research course in one of the instructional departments of the University.

In addition to the Western Culture sequence (11, 12, and 13), the Honors Program offers special courses and sections in biology, chemistry, economics, English, history, mathematics, philosophy, and religious studies.

INTERNATIONAL PROGRAMS

Dennis R. Gordon *(Director)*
Barbara J. Colyar *(Assistant Director)*

Director, International Business Studies: Shakrokh M. Saudagaran
Coordinators, Rouen Exchange Program: André L. Delbecq; Catherine R. Montfort
Coordinators, Trinidad and Tobago Summer Program: Janice Edgerly-Rooks; Dennis R. Gordon
Coordinator, Sophia Exchange Program: Maryellen Mori
Coordinator, Durham Exchange Program: Dennis R. Parnell, S.J.
Coordinator, Assisi Summer Program: Victor B. Vari

International Programs provides a variety of academic programs and services to Santa Clara University and the community. Along with the programs described below, International Programs presents lectures, forums, cultural events, and other activities exploring the world from an interdisciplinary perspective.

INTERNATIONAL BUSINESS MINOR

International Business is a University program designed to educate students in a broad range of management and international business skills and to offer an understanding of the culture, history, and politics of a selected geographic area. Students select an area of geographic specialization (Europe, East Asia, or Latin America and the Caribbean) and are assigned a faculty adviser who shares their field of interest.

International Business is open to all undergraduates in the College of Arts and Sciences and the Leavey School of Business and Administration as a supplement to their major. Program requirements include proficiency in a language of the geographic area of concentration (usually through the 101 level); a selection of courses in modern history, business ethics, political science, and contemporary culture; and a selection of courses in international economics, finance, marketing, and management.

INTERNATIONAL STUDIES MINOR

International Studies is a University program designed for students wishing to concentrate course work beyond their majors in a multidisciplinary study of international social, economic, cultural, and political topics. The program is open to all SCU undergraduates.

Students organize their courses in one of two ways: an *area studies* focus on one of three geographical areas (Europe, Latin America and the Caribbean, or East Asia); or a *thematic* focus of their choice, such as poverty and development, diplomacy and law, or peace studies. Students must also complete two upper-division language courses in a language appropriate to their area of interest and other selected core requirements in anthropology, geography, and political science.

STUDIES ABROAD

Santa Clara provides opportunities for study throughout the world. The University operates or is affiliated with numerous programs, including sites in Africa, Latin America, Europe, and Asia. Programs, which are available for one semester, a full year, or summer, offer courses of study in many fields, including the humanities, social sciences, natural sciences, and business. Students should begin exploring study abroad opportunities during their freshman year. With planning and forethought, programs can be arranged for most majors.

All Studies Abroad students must be currently enrolled at the University and have at least junior status (88 units) once the program begins. To ensure the academic quality of the study abroad experience and transfer of credit, students normally are permitted to participate only in programs formally affiliated with Santa Clara University (see Pages 21–22 for credit transfer policy). Approval of the student's academic adviser and the director of International Programs is required for admission to Studies Abroad programs.

Note: Information about International Business, International Studies, and Studies Abroad may be obtained from the International Programs Office, 314 O'Connor Hall (408-554-6940).

ETHNIC STUDIES

Professor: Stephen S. Fugita (Psychology/Ethnic Studies)
Associate Professors: Ramón D. Chacón (History/Ethnic Studies); Alma M. García (Sociology/Ethnic Studies)

The Ethnic Studies Program is a University program designed for all undergraduates who are interested in studying and understanding the historical and contemporary experiences of underrepresented racial/ethnic groups in the United States. The program offers interdisciplinary courses based primarily on the scholarship within the academic discipline of ethnic studies. The focus of the Ethnic Studies Program is on African Americans, Asian/Pacific Islander Americans, Chicanas/Chicanos, and Native Americans in the United States. Faculty members from all departments are encouraged to develp new courses and conduct research in ethnic studies.

The program also coordinates University-wide events to promote a critical analysis of the experiences and issues dealing with underrepresented racial/ethnic groups in our society. It organizes such activities in order to provide the University and surrounding communities with a better understanding of the societal significance and impact of race/ethnicity and their relationship with other critical factors, particularly gender and social class.

The ethnic studies minor complements a student's major by broadening his/her field of study to include an academic focus on race/ethnicity. It enhances a student's employment opportunities in business, education, law, medicine, social work, and government. The minor provides a foundation for graduate studies for

students who plan to become university professors and researchers with a specialization in ethnic studies.

REQUIREMENTS FOR MINOR

In addition to the University Core Curriculum and College requirements for the Bachelor of Science or Bachelor of Arts, students must complete seven ethnic studies courses. The required courses are divided into three sections:

1. Students must complete three lower-division courses from the following subject areas: African American Studies, Asian American Studies, Chicana/Chicano Studies, and Native American Studies. Students must take three from the following to fulfill this requirement: Ethnic Studies 10, 20, 30, or 40. Ethnic Studies 90 or 95 (but not both) can also be used to fulfill this requirement.
2. Students must complete three upper-division courses in an area of specialization (i.e., African American Studies, Asian American Studies, Chicana/Chicano Studies, or Comparative Ethnic Studies). One of these must be selected from the following courses, which focus on women of color: Anthropology 90, Ethnic Studies 121, Ethnic Studies 141, and Sociology 153.
3. Ethnic Studies 199 is a Capstone project representing the culmination of a student's course of specialization in ethnic studies. It must be taken during the senior year. Ethnic Studies 199 consists of a directed reading/research project or internship supervised by a faculty member (core or affiliated faculty) in the Ethnic Studies Program. This course must be taken for a minimum of 2 quarter units and must be approved by the director of the program prior to registration.

Completion of the ethnic studies minor is noted on a student's transcript. A certificate is given to students completing the minor.

LOWER-DIVISION COURSES

10. Introduction to Native American Studies

A multidisciplinary course addressing key issues regarding identity and definition among indigenous peoples in the United States. How members of each group view themselves; how they are defined by others; how interactions between the different cultures influence one another.

20. Introduction to Chicana/o Studies

A survey course in Chicana/Chicano studies addressing key issues in Chicana/o communities in the United States. Focuses on such issues as immigration, culture, family, family and kinship, identity, gender roles, religion, education, politics, and labor force participation.

30. Introduction to African American Studies

Multidisciplinary survey of African American culture. African cultural heritage and African survivals. World views and values, religious beliefs, family and kinship, language. Contemporary community issues of identity, sex roles and

stereotyping, housing, employment, and education.

40. Introduction to Asian American Studies

Multidisciplinary survey of Asian Americans. Asian cultural heritage, immigration, and the formation of Asian American communities. World views and values, religious beliefs, family and kinship, language. Contemporary community issues of identity, sex roles, stereotyping, employment, and education.

90. Racism in the United States

Multidisciplinary study of racism in the United States. Its historical manifestations from the arrival of Europeans in North America to contemporary times; its psychological dimensions (prejudice, stereotypes, discrimination); and its place in the U.S. political economy. Emphasis on African Americans, but includes discussion of Native Americans, Chicanos/as, and Asian Americans.

95. Introduction to Ethnic Studies

A critical assessment of African American, Native American, Asian American, and Chicanos/as peoples. A comparative framework is used to examine topics such as language, family interaction, economic and social locations, political aspirations, self-definition, and values.

UPPER-DIVISION COURSES

112. Native Peoples of the United States and Mexico

Examination of the national policies, ideologies, and attitudes that have shaped the lives of indigenous peoples living along the U.S.–Mexico border. Issues include cultural survival, cultural change, national and individual identity, gender relations, legal and political problems, and intercultural relations.

120. Mexican Immigration to the United States

Examination of the process of Mexican immigration to the Unites States since 1910 with a focus on the role of Mexican immigrant labor in California agribusiness. An analysis of reasons for Mexican immigration and the responses of the United States to such immigration. Special focus on Mexican farm laborers, the various movements to organize them, and on Cesar Chavez and the UFW.

121. Chicana/o Families and Gender Roles‡

An examination of Chicana/Chicano families in the United States. Addresses two general areas in family research: (1) the historical development of Mexican immigrant families and subsequent generations of communities and families of Mexican Americans, and (2) a life-cycle analysis of families with a specialized focus on gender roles and relations. (Also listed with Women's Studies.)

122. Chicana/o Communities

An examination of the development of the social, cultural, political, and economic structures that shape Chicana/ Chicano communities in the United States. Themes include the evolution of barrios, the historical and contemporary impact of Mexican land grants, ghettoization, education, gangs, employment, and the political economy.

140. Japanese Americans and the Concentration Camps

An examination of the political, social, and economic conditions that led to the World War II incarceration of Japanese Americans, their experiences in the camps, and the long-term impact of the internment on Japanese Americans and their communities.

‡ Course included in Women's Studies Program

141. Asian American Women‡

An examination of Asian American women from a historical and contemporary framework within U.S. society. Focuses on the struggle for identity and adjustment in the first generation and the conflicts with subsequent generations of Asian American women. Analyzes two major themes: (1) the interplay of gender identity formation and conflict, both in the family and in the paid labor force, and (2) the development of individual and collective survival strategies.

142. Asian American Communities

An examination of selected topics affecting Asian Americans in the United States. Issues include the changing nature of communities, community institutions, anti-Asian violence, occupational glass ceilings, higher education, political mobilization, gender relations, identity formation, and the new patterns of Asian immigration.

150. Racial/Ethnic Writers in Comparative Perspective

An examination of the expression of race and ethnicity in the writings of African Americans, Asian Americans, Native Americans, and Chicanas/os. Themes include the racial/ethnic/gender/class representation of self, identity, culture, and community in U.S. society. Focus on the interrelationship between literature and literary criticism and the sociohistorical context within which it is produced.

153. Race, Gender, and Class in the United States

Examination of the historical and contemporary experiences of women of color in the United States: African American, Asian American, Chicanas, and Native American. Focus on the impact of cultural, social, economic, and political institutions on women of color. Particular emphasis on the development of survival strategies. (Also listed as Sociology 153.)

199. Directed Readings/Research or Internship

A Capstone senior project representing a student's specialization in ethnic studies. *Prerequisite: written approval by the director of the Ethnic Studies Program prior to registration.*

DEPARTMENTAL COURSES APPLICABLE TO THE MINOR

Note: For descriptions, see the listings of the relevant departments. Students should consult with the director of the Ethnic Studies Program to determine the applicability of courses taken at other institutions or at study-abroad programs.

Anthropology

86. Native American Cultures
90. Cross-Cultural Study of Women
146. Perspectives on the Spanish & Native American Experience
187. Native American Cultures of the Pacific Coast

Center of Performing Arts

71. Music in American Culture

‡ Course included in Women's Studies Program

Communication

27. Intercultural Communication
121. Minorities and the Media

Education

163. Introduction to Teaching in a Multicultural Society

English

35. African American Literature
36. Chicana/Chicano Literature
37. Native American Literature
69. Literature by Women: Third-World Women Writers in the United States
79. American Cultures: Multiethnic Literature in the United States
140. Chicana/Chicano Literature II
166. Pan-African Literature

History

81. Chicanas/Chicanos in the Southwest
104. African Americans and Africa
180. Native Americans of the United States

Modern Languages

133. Mexican American Literature

Political Science

40. Chicana/Chicano Politics
153. Ethnic Politics

Psychology

156. Prejudice and Discrimination

Religious Studies

91. Native American Religions
184. Race and Religion in the United States

Sociology

132. Social Stratification
150. Ethnic Enterprises
153. Race, Gender, and Class in the United States
175. Race and Inequality

Theatre

23. Chicana/Chicano Theatre
163. Multicultural Theatre

WOMEN'S STUDIES

Barbara Molony *(Director)*

The Women's Studies Program offers both women and men students opportunities to study the experiences, contributions, and cultural images of women while working toward a degree in a traditional academic discipline. The program consists of courses given by various undergraduate departments. The program encourages the development of new courses and faculty research specifically concerned with women. Its office serves as a resource center for the academic community.

The women's studies minor provides students with an academic specialization in a field of studies that will broaden an understanding of gender relations and dynamics from a variety of scholarly perspectives. The women's studies minor can be combined effectively with a broad range of majors. Students gain knowledge regarding women's issues and are thus better prepared to work with both the general and female population in a variety of areas.

REQUIREMENTS FOR MINOR

In addition to the University Core Curriculum and College requirements for the Bachelor of Science or Bachelor of Arts, students must complete seven courses from the course offerings in the Women's Studies Program. The required courses are divided into four sections:

1. ***Women's Studies 50.*** Women, Culture, and Society consists of an introduction to the discipline of women's studies.
2. Students select two courses from the approved list. These courses represent those areas of feminist scholarship that provide broad-based perspectives on the study of women. These courses must be selected from two different disciplines and at least one of these two courses must be upper division.
3. Students select three specialized courses in women's studies from the approved list. Two courses must be upper division. One course must be from a geographical area other than the United States or Europe.
4. ***Women's Studies 199.*** A directed reading/research project or internship under the supervision of a faculty member in the Women's Studies Program.

Completion of the minor is noted on a student's transcript and the student receives a certificate acknowledging his/her accomplishment.

DEPARTMENTAL COURSES APPLICABLE TO THE MINOR

Note: For descriptions, see the listings of the relevant departments. In addition to the courses listed below, many departments offer occasional special topics, directed reading/directed research, and seminar courses on women's studies topics. Students should consult with the program director to determine the applicability of these, as well as of courses taken at other institutions or while studying abroad, to the minor.

WOMEN'S STUDIES

50. Women, Culture, and Society

Examines the impact and consequences of gender in the daily lives of women in societies. An interdisciplinary perspective used to analyze the effects of societal institutions and processes on women. Particular attention given to the development and dynamics of gender inequality.

107. Women in Mathematics and Science

Texts explore the role of women in science, their early prominence and success and their re-entry into the fields, how they have contributed, and what factors in society led to their exclusion. Also covers the way science viewed women and some of the myths of their physical and mental abilities. Looks at some of the many paths of current feminist theory relative to the sciences. Compares the current research with past ideas using recent statistical studies to decide if woman's position has or has not changed.

199. Directed Reading/Research/ Internship

Anthropology

88. Women in the Middle East
90. Cross-Cultural Study of Women
157. Family and Kinship

Art

189. History of Women Artists

Classics

185. Women in Ancient Greece
186. Women in Ancient Rome

Communication

122. Gender, Media, and Representation

English

30. Studies in American Literature
30. Studies in American Literature: Stories and Storytellers—Short Fiction by American Women
68. Literature and Women
69. Literature by Women: Third-World Women Writers in the United States
125. Feminist Literary Theory and Criticism
168. Women and Literature
168. Women and Literature: Medieval European Women
168. Women and Literature: Poetry by Women

Ethnic Studies

121. Chicana/o Families and Gender Roles
141. Asian American Women

French

180. Gender in Modern French History and Literature
182. Women in French Literature: Authors and Characters
183. 20th-Century French Women Writers
184. 20th-Century French Women Writers in Translation

German

182. Women in German Literature: Authors and Characters

History

125. Medieval European Women
144. Women in Islamic and African Societies
150. Women in East Asia
155. Women in South Asia
181. Women in U.S. Society
182. Family in U.S. History

Italian

113. *Cinema e Cultura*
182. 20th-Century Italian Women Writers

Japanese

182. Japanese Women's Literature in Translation

Political Science

154. Women and Politics
184. Seminar in U.S. Politics: Women and Politics

Religious Studies

70. Women in the Biblical Traditions
114. Women in the New Testament
131. Feminist Theology
185. Gender and Religion in Asia

Sociology

135. Women and Social Change in Latin America
152. Women and Men in the Workplace
153. Race, Gender, and Class in the United States
157. Family and Kinship

Spanish

148. 20th-Century Latin American Women Writers

CATHOLIC STUDIES

Paul Crowley, S.J. *(Director)*

The Catholic studies minor offers students from all departments a cross-disciplinary program for the study of the intellectual tradition of Catholic faith. The minor is designed for (1) intensive study of Catholicism as a faith, (2) critical retrieval of the Catholic intellectual tradition through dialogue with contemporary thought, and (3) pursuit of the intersection between faith and culture in the arts and humanities, as well as in the social and natural sciences. Catholic studies minors are assigned a faculty mentor who will personally guide them throughout the program. The program is also distinctive in that the course of study is not limited to the offerings of the Religious Studies Department.

REQUIREMENTS FOR MINOR

Foundational Courses

Students complete three foundational courses, two in Catholic theology from offerings in the Religious Studies Department (from 1 to 99). The foundational requirement is completed by successfully passing the second course in the Western Culture series.

Faith and Culture Courses

Students then complete: (1) one specialized course in Catholic history, (2) one course in Catholic literature, (3) a specialized course in philosophy or an upper-division course in theology, and (4) two approved electives in the study of Catholic culture.

The Colloquium

During the junior and senior years, students participate in a 1-unit per quarter interdisciplinary colloquium that meets several times per quarter to discuss topics in theology, philosophy, literature, history, the arts, and the sciences.

Completion of the minor is noted on the student's transcript, and students receive a certificate acknowledging their accomplishment. A complete list of program-related courses is available from the program director.

COMMUNITY STUDIES

Eleanor Willemsen *(Director)*

The community studies minor emerges out of the University's goal to educate future leaders who can define not only "what is" but also "what should be." The goal of the minor is to provide a critical intellectual component to students' experience of the problems, issues, and challenges facing various constituencies in the local community. The minor focuses on the local Santa Clara County/South Bay area; it is also attentive to the national and international aspects of some of these problems and issues.

The program is distinguished by linking a multidisciplinary approach with a community-based pedagogy. A fundamental principle of the program is that students must bring together insights from the relevant disciplines to analyze a specific problem, such as poverty, homelessness, health care, the working poor, illiteracy, child abuse, immigration, the welfare system, domestic violence, or women in poverty. At the center of the individual student's "plan of study" will be direct experience with community members and agencies, along with appropriate course work and a Capstone research project.

REQUIREMENTS FOR MINOR

The community studies minor requires eight courses:

FOUNDATIONAL COURSES

Social Science Methodology One course from the following lower-division courses:

Anthropology 3 (Introduction to Social and Cultural Anthropology)
Economics 1/2 (Principles of Macro- and Microeconomics)

Political Science 1 (Introduction to U.S. Politics)
Psychology 11 (Psychology as a Social Science)
Sociology 1 (Principles of Sociology)

Ethical/Religious Perspectives Two courses within humanities focusing on ethical and religious approaches to the social issues of poverty and justice:

Philosophy 5, 6, 7, 8, 9, 110, 113 (Various ethics courses offered through the Department of Philosophy)
Religious Studies 45 (Christian Ethics)
Religious Studies 46 (Faith, Justice, and Poverty)
Religious Studies 155 (Catholic Social Teaching)

Introduction to Community Studies To be taken late in the sophomore year before students begin upper-division course work. It is intended to be interdisciplinary in nature, and thus draws on students' work in the other two foundational areas. By the end of the course, students are expected to develop a "program of study" for their upper-division work.

UPPER-DIVISION COURSES

The upper-division portion of the program, building on the lower-division course work, is structured around the research focus students develop in conjunction with a program adviser. Before they begin upper-division work, the Program Council must approve students' "program of study" proposals that identify a specific topic (child welfare, illiteracy, etc.) and outline how the course work and internship they have selected will enable them to complete an interdisciplinary and community-based study of it.

Students complete four upper-division courses as follows:

1. *Two upper-division courses* from different disciplines to help students develop the disciplinary methods and skills necessary for more advanced research;
2. *an internship* selected from one of the department programs for which students are qualified that will allow them to interact with the community and thus engage in issue-based participatory research;
3. *a senior Capstone Seminar* course that includes community placements and major written projects (a summation of student-conducted research).

COMMUNITY STUDIES COURSES

1. Introduction to Community Studies

An introduction to the community-based and interdisciplinary method of community studies. *Prerequisite: Foundational courses for the minor: 1 course from courses fulfilling University Core Social Science requirement; 2 courses from among Philosophy 5, 6, 8, 9, 110, 113, and Religious Studies 45, 46, 155, 158.*

197. Senior Capstone Course

Completes students' program of study through a final community placement, the completion of their research project, and interdisciplinary collaboration with other students in the minor working on different problems. *Prerequisite: permission of instructor; presumes completion of all other courses for the minor.*

CREATIVE WRITING

Edward Kleinschmidt *(Coordinator)*

The Creative Writing Program at Santa Clara offers students a coherent course of study in poetry, fiction, and creative nonfiction. The creative writing minor is firmly grounded within the liberal arts tradition, integrating courses in poetry, fiction, drama, and creative nonfiction writing within their broader literary and cultural context. Carefully designed sets of courses enable students to develop their craft in one or more of these areas. Introductory courses familiarize them with the theory and practice of the genre, intermediate "craft" courses focus on specific models, using literary examples to explore several "craft" issues, such as line, form, or narrative voice. In advanced courses students write and critique one another's work in a particular genre. All students are required to take at least two literature courses (in English, classics, or modern languages) to familiarize themselves with the tradition in which they are working.

Each student works with the director or an adviser from the Program Council to coordinate a specific course of study. Upper-division students may also pursue advanced work in dramatic writing, writing in a second language, or literary biography by working individually with program faculty in theater, classics, modern languages, or history.

REQUIREMENTS FOR MINOR

LOWER-DIVISION COURSES (14 UNITS)

Literature (4 units)

From English, classics, modern languages

Creative Writing (8 units)

71. Fiction Writing
72. Poetry Writing

Practicum (2 units)

90A/90B. Literary Review Practicum

UPPER-DIVISION COURSES (27 UNITS)

Literature (5 units)

One course in 20th-century literature in English or modern languages

Creative Writing (15 units) Choose one course from each of the following three groups:

Craft (5 units)
126. The Craft of Poetry *or*
127. The Craft of Fiction

Workshop (5 units)
171. Advanced Fiction Writing *or*
172. Advanced Poetry Writing

Electives (5 units)
170. Play Writing
173. Screenwriting
174. Advanced Nonfiction Writing
181. Writing for Publication
196. Community Projects in Creative Writing

Senior Capstone Course (2 units)

Senior reading: Seniors organize, produce, and participate in a senior poetry/fiction reading series
Community projects: continued work at Eastside Project sites
190A/190B. Literary Review Practicum. See above, 90A/90B.

Completion of the minor is noted on the student's transcript, and students receive a certificate acknowledging their accomplishment. A brochure and complete list of program-related courses are available from the program director.

ENVIRONMENTAL STUDIES

Amy M. Shachter *(Director)*

The environmental studies minor supplements a wide variety of majors, from anthropology to physics, and can easily be completed by students in the College of Arts and Sciences, the Leavey School of Business and Administration, and civil engineering students in the School of Engineering. (Engineering students should consult their advisers.) The minor provides an opportunity for students to focus

on environmental issues through a variety of academic approaches in the humanities, social and natural sciences, engineering, and law.

Students select eight courses in the first five categories shown below, and gain further breadth by choosing one elective from an extensive list available from an adviser. The minor is also enriched by quarterly colloquia on environmental themes, featuring presentations by journalists, politicians, businesspeople, scientists, and other scholars. Students are required to attend six of these special presentations during their participation in the program. The minor culminates in the Capstone Course where seniors from diverse majors grapple with environmental issues.

Each student works with an adviser chosen from the Program Council who helps coordinate the environmental studies curriculum with the student's major and plans for future study and/or work in environmental fields, if he/she so desires.

Completion of the program is noted on the student's official transcript, and all graduates receive a certificate acknowledging their accomplishment.

REQUIREMENTS FOR MINOR

Students must complete the following requirements:

1. *Scientific Foundations*
   a. One statistics course chosen from Math 8 (Introduction to Statistics), Applied Math 108 (Probability and Statistics), Psychology 40 (Statistical Data Analysis), or Business Administration 40 (Statistics and Data Analysis I). Biology 156 (General Ecology) or 165 (Animal Behavior) can be taken with permission of the program director.
   b. Two courses chosen from Chemistry 1 (Chemistry and the Environment), Chemistry 5 (General Chemistry), Chemistry 30 (Environmental Applications in Organic Chemistry), Civil Engineering 20 (Geology), General Engineering 15 (Environmental Quality Engineering), Physics 51 (Introduction to Earth Science), Civil Engineering 143 (Environmental Engineering), and Chemistry 111 (Instrumental Methods of Analysis I)
   c. One course chosen from Biology 43 (Human Ecology), Biology 44 (Endangered Ecosystems), Biology 91 (Populations), or Environmental Studies 141 or Biology 157 (Environmental Biology in the Tropics).
2. *Ethics* or *Spirituality* Philosophy 9 (Ethical Issues and the Environment), Religious Studies 109 (The Bible and Ecology) or Religious Studies 161 (Environmental Ethics).
3. *Economic Dimension* Agribusiness/Economics 101 (Resources, Food, and the Environment), Economics 110 (Natural Resource Economics), Economics 134 (African Economic Development), or Marketing 182 (Special Topics in Marketing)—when the focus relates to environmental studies.
4. *Social/Cultural Dimension* One course chosen from Anthropology 144 (Cultural Ecology), Sociology 138 (Population and Resources), Anthropology/Political Science 50 (World Geography), History 185 (American Environmental History), or History 184 (American Historical Geography).

English 79 (Composition and Literature) when the focus relates to environmental studies.

5. *Political/Legal Dimension* One course chosen from Environmental Studies 120 (Introduction to Environmental Law and Regulation) or Environmental Studies 140 (Politics in Less-Developed Countries: Environmental Policy in Trinidad and Tobago). Political Science 161 (Law and Politics in the United States), 167 (The Making of Public Policy), or 196 (Seminar in International Relations) can be taken with permission of the program director.
6. *Elective* One course chosen from list provided by the Environmental Studies Office.
7. *Capstone Seminar* Environmental Studies 101.
8. *Colloquia* Attendance at six presentations required (see adviser for details).

ENVIRONMENTAL STUDIES COURSES

101. Capstone Seminar

Interdisciplinary study of complex environmental issues. Required of all environmental studies minors. *Prerequisites: senior status and permission of instructor.* (5 units)

120. Introduction to Environmental Law and Regulation

Introduction to the U.S. legal system's approach to environmental protection. Topics include the roles of legislatures and environmental agencies at the federal, state, and local levels; the independent role of the judiciary in establishing environmental law; and specific statutes, such as the Clean Air Act. Students evaluate questions of federalism, uses of economic incentives, relationships between environmental protection and economic growth, etc.

140. Politics in Less-Developed Countries: Environmental Policy in Trinidad and Tobago

This summer course examines the public-policy process in the Caribbean with an emphasis on environmental issues in Trinidad and Tobago. Topics may include the political economy of development, interest groups, legislative and executive roles, the private sector, mass movements, and international influences. Includes two-week field excursion to Trinidad and Tobago. Satisfies Political/Legal Dimension requirement of environmental studies minor or International Studies/Business requirement. (Also listed as Political Science 140.) *Prerequisite: Political Science 2 or 25 recommended but not required.*

141. Environmental Biology in the Tropics

This summer course examines basic biological features of a diversity of tropical habitats and species of special concern in the tropical nation of Trinidad and Tobago. A two-week field excursion to the islands is required. Topics may include ecotourism and coral reefs, rain forest ecology, the cage-bird problem, scarlet ibis and mangrove swamps, and leatherback turtles and environmental activism in local communities. (Also listed as Biology 157.)

198. Independent Research or Internship

Students wishing to enroll in 198A or 198B should prepare a written description of the proposed course for review by the program director in the fifth week of the term preceding the start of the project. *Prerequisite: permission of program director and instructor before registration.*

198A. Internship

Participation in a formal program focusing on environmental problems in an off-campus setting. Work will proceed under guidance of cooperating specialists. Frequent meetings with on-campus advisers suggested. (Units to be arranged.)

198B. Research

Supervised research on campus under the guidance of a faculty member. Work is generally sustained for one year with credit given only during one quarter. The goal should be a written report suitable for publication. (Units to be arranged.)

199. Directed Reading and Research

Detailed investigation based on directed readings on advanced environmental topics, under the close supervision of a faculty member or the program director. *Prerequisite: permission of program director and instructor before registration.* (Units to be arranged.)

GERONTOLOGY

Mary Elaine Hegland and Patti M. Simone *(Co-Directors)*

Gerontology is the study of the elderly and of the aging process. Majors from any field may enhance their credentials and their ability to work with the elderly—a fast-growing population—through the Gerontology Certificate Program. Students examine influences on the roles and quality of life of the elderly as well as physical and psychological aspects of aging. Courses investigate perceptions about the elderly in various societies and how the experiences of older people differ according to culture, ethnicity, class, and gender. Students complete a practicum that gives them experience working with the elderly. Completion of the Gerontology Certificate Program is noted on the student's transcript, and students receive a certificate acknowledging their attainment.

REQUIREMENTS FOR CERTIFICATE

In addition to the University Core Curriculum and College requirements for the Bachelor of Science or Bachelor of Arts, students must complete the following:

LOWER-DIVISION COURSES

At least one of the following four courses: Sociology 1 (Principles of Sociology), Anthropology 3 (Introduction to Social/Cultural Anthropology), Psychology 10 (Psychology as a Natural Science), or Psychology 11 (Psychology as a Social Science).

UPPER-DIVISION COURSES

Biology 187 (Biology of Aging), a gerontology-related practicum approved by the director, and at least three of the following courses: Anthropology 172 (Anthropology of Aging), Political Science 168 (Special Topics in Public Policy/Politics of Aging), Psychology 188 (Adult Development Seminar), Psy-

chology 196 (Psychology of Aging), Sociology 172 (Sociology of Aging), Sociology 176 (Elder Law), or any gerontology-related course with approval of directors.

MEDIEVAL AND RENAISSANCE STUDIES

Phyllis Brown *(Director)*

The Medieval and Renaissance studies minor offers students from all departments a cross-disciplinary and interdisciplinary program of study in Europe's Middle Ages and Renaissance. These periods lay on the edge of modernity, when the distinctive characteristics of the contemporary world began to form and when major new connections were made between Europe and Africa, the Middle East, East Asia, and the Americas. Study of these periods from many different points of view affords an opportunity to gain valuable perspectives on both their inspiring achievements and their troubling conflicts, and to reflect on the ways that Medieval and Renaissance persons, events, and institutions helped to shape the modern world.

REQUIREMENTS FOR MINOR

Students must complete seven courses from those listed below and write an integrative paper for credit during their senior year.

A maximum of three courses can be lower division (1–99), with no more than two of those from the Western Culture sequences. The rest of the courses must be upper division (100–199), and must be selected from at least three different departments. No more than one lower-division and two upper-division courses taken to satisfy a student's major may ordinarily be applied toward the minor.

The senior paper is written as an independent study (Medieval and Renaissance Studies 199) under the supervision of the program director and an affiliated faculty member. It is read and graded by the Program Council and is awarded 5 units of course credit upon its successful completion.

Study of French, German, Greek, Italian and/or Spanish is recommended, and the study of Latin, especially for proficiency in Medieval Latin, is strongly encouraged. Students should consult with the director to determine the clusters of courses best suited to their personal interests and preparation.

Completion of the minor is noted on the student's transcript, and students receive a certificate acknowledging their accomplishment.

MEDIEVAL AND RENAISSANCE STUDIES COURSES

199. Independent Study

Directed reading and research in source materials and secondary works dealing with selected problems rooted in the Medieval and/or Renaissance periods. The integrative senior paper is written under this course designation. *Prerequisite: permission of program director and instructor.*

DEPARTMENTAL COURSES APPLICABLE TO THE MINOR

Note: For descriptions, see the listings of the relevant departments. In addition to the courses listed below, many departments offer occasional special topics, directed reading/directed research, and seminar courses on Medieval and Renaissance topics. Students should consult with the program director to determine the applicability of these, as well as of courses taken at other institutions or while studying abroad, to the minor.

Anthropology and Sociology

146. Perspectives on the Spanish & Native American Experience

Art

11. Western Culture: Art History I
12. Western Culture: Art History II
172. Eastern Christian and Byzantine Art
173. Early Medieval Art
174. Romanesque and Gothic Art
175. Early Renaissance Art
176. High Renaissance and Mannerist Art
177. Northern Art in the Renaissance Period

Center of Performing Arts

11. Performance and Culture I

Classics

135. Medieval Latin

Economics

117. European Economic History

English

12. Western Culture: Literature II
41. Survey of English Literature I
54. Shakespeare
113. English Drama I
116. Shakespeare's Tragedies
117. Shakespeare's Comedies
118. Shakespeare's Histories
141. Medieval Literature
142. Chaucer
143. Renaissance Literature

144. The 17th Century
145. Milton
162. Comparative Humanism
188. Senior Seminars (on Medieval and Renaissance topics)

French

115. Survey of French Literature I
120. Moyen Age
130. 16th Century

History

12. Western Civilization: Medieval and Early Modern
45. Introduction to African History and Cultures
61. Latin America: Indians and Conquerors
103. History of the Jesuits, 1491–1992
112. Byzantine Empire
115. Western Barbarians: 300–1100
116. Crusading Age: 1000–1450
117. State and Church in the Middle Ages: 1000–1450
118. Renaissance and Reformation: 1350–1600
119. Dynasties and Discoveries: Europe, 1560–1763
120A. Early Modern England
125. Medieval European Women
134. European Culture and Society
143. Origins and Development of Islam
146A. Medieval and Early Modern Japan
147A. Premodern China
154B. State, Religion, and Gender in Medieval and Premodern India
160. Mexico: Colonial and Early National Periods
192. Seminar in Medieval or Early Modern Europe

Honors

12. Medieval and Early Modern Culture

Italian

110. Italian Civilization I
120. Survey of Italian Literature I
130. Dante, La Divina Commedia I
131. Dante, La Divina Commedia II
140. Duecento, Trecento
150. Quattrocento, Cinquecento (Rinascimento)

Music

170. Music History I: Antiquity Through Early Baroque

Philosophy

11. Western Culture: Philosophy I, Classical & Medieval
132. Medieval Philosophy

Religious Studies

36. Theology and Ethics of Thomas Aquinas
65. Early Christianity
66. Medieval Christianity
167. Late Medieval Religion
174x. State and Church in the Middle Ages, 1000–1450
194x. History of the Jesuits, 1491–1992

Spanish

120. Major Works of Spanish Literature I
122. The Spanish Picaresque Novel
123. Siglo de Oro Drama
130. Survey of Latin American Literature I
165. Cervantes: Don Quijote

Theatre and Dance

112. World Drama I: Middle Ages Through English Restoration
122. Acting Styles III: Shakespeare
150. Social History of Fashion I

CENTER OF PERFORMING ARTS

Performance Studies

Jerald R. Enos, CSC *(Director)*

Lecturers: Robert P. Bozina, Rebecca A. Edwards

The newly created Santa Clara University Center of Performing Arts includes the Department of Music, the Department of Theatre and Dance, and joint academic programs such as the musical theatre minor and the performance studies courses that have been approved for the University Core. The center will also include all musical and theatrical performing ensembles, including the SCU Orchestra, the Santa Clara Chorale, the Pops Ensemble, and Music at Noon. In addition to these University and College uses, the center will become a community resource to advance the performing arts in the area.

11. Performance and Culture I

Interdisciplinary study of Western Culture through the arts of music, theatre, and dance. Survey of eras from ancient Greece through the Renaissance. Open to majors and nonmajors. (Formerly listed as Music 11 and Theatre 11.)

12. Performance and Culture II

Continuation of PERF 11. Survey of the baroque, classical, and early romantic eras. Open to majors and nonmajors. (Formerly listed as Music 12 and Theatre 12.)

13. Performance and Culture III

Continuation of PERF 12. Survey from 19th-century romanticism to the present. Open to majors and nonmajors. (Formerly listed as Music 13 and Theatre 13.)

71. Music in American Culture§

A survey of music generated by America's diverse populations, including Latino, African American, Native American, Cajun, Appalachian, and Asian. Open to nonmajors. Fulfills the Ethnic Studies requirement. (Formerly listed as Music 71).

72. World Music Survey

Survey of non-Western music focusing on appreciation of styles, cultural functions, and performing practices of diverse cultures. Open to nonmajors. Offered in alternate years. (Formerly listed as Music 72.)

76. Writing About Music

Practice in the articulation of thoughts and feelings about music through such projects as research writing, essays, musical reviews, and creative writing. Some concert attendance required. (Formerly listed as Music 76.)

162. African American Dance History

Exploration of African American dance's contribution to U.S. culture from slavery through the present. How minstrel stereotypes, jazz dance sources, black concert dance, and hip-hop reflect racial and social realities in America. (Formerly listed as Theatre 162.)

Minor in Musical Theatre

The musical theatre minor is designed for students interested in an active educational experience in this uniquely American art form. Students take courses from the three areas of study in musical theatre: acting, dance, and music. After completing these courses, students participate in a Capstone Course (Musical Theatre Production Workshop) that integrates the three disciplines. The Capstone Course is designed to showcase the skills and talents developed by the musical theatre minor.

REQUIREMENTS FOR MINOR

Foundational Courses

Students take courses in acting, dance, and music. The lower-division courses include Theatre 20 (Beginning Acting I), Dance 46 (Modern Dance I), Music 30 (Beginning Piano Class), and Music 34 (Beginning Voice Class).

§ Course included in Ethnic Studies Program

The History of American Musical Theatre

Students complete a course to enhance their understanding of this discipline with an in-depth look at musical theatre as an American art form, which has its roots in vaudeville, burlesque, and minstrel shows.

Upper-Division Courses

These courses provide students a chance to focus on the art of study that they wish to enhance. Included are courses in acting styles, advanced dance courses, and musicianship courses.

Musical Theatre Production Workshop

The final Capstone for the minor, this course gives students the opportunity to perform in a musical theatre production workshop that will cover the study of songs and scenes from a wide variety of musicals.

A complete list of program-related courses is available from the Center of Performing Arts.

URBAN EDUCATION

Sara Garcia, Nedra Shunk *(Coordinators)*

The urban education minor provides Santa Clara undergraduate students seeking to become K–12 teachers with the basics in educational theory, urban school observation and reflective experiences, and the sociological and psychological foundations needed to embark on teaching internships upon graduation. Those who wish to pursue a more traditional pre-service credential program may, through this minor, have completed a number of course requirements for the basic multiple-subjects or single-subject teaching credential. The urban education minor has two distinctive elements. First, the urban element springs from the Jesuit commitment to a preferential option for the poor and reflects the multicultural focus of CP&E basic credential programs. Societal problems, such as poverty, crime, and prejudice, challenge teachers and policy-makers who struggle daily with how to strengthen the K–12 educational experience for children. The critical-thinking orientation reflects a focus on intellectual excellence, analytic reasoning, and the goal of teaching children to think. A solid body of educational research, reinforced by numerous workforce policy analyses, shows a strong consensus among educators, policy-makers, and employers that critical thinking, along with problem solving and communication, must be points of emphasis through the entire K–12 spectrum.

This undergraduate minor is offered with the participation and support of the Division of Counseling Psychology and Education. Successful and expeditious progress toward graduation in four years requires careful advising and thoughtful planning. It is strongly recommended that students interested in K–12 teaching consult with the director of liberal studies in the College of Arts and Sciences in order to be assigned an academic adviser knowledgeable with regard to the

many state requirements associated with earning a multiple-subjects or single-subject credential.

Any student interested in teaching can complete a minor in urban education offered through the Division of Counseling Psychology and Education. This minor focuses on preparing students for internships in the fifth-year credential program. For a listing of the courses needed to complete the minor, see Chapter 8.

Tuition Full-time Santa Clara undergraduates in good academic standing who have attained senior standing may enroll in CP&E urban education required post-baccalaureate courses at the 200 and 300 level. These courses are taken as an overload, and are not counted toward the student's undergraduate unit requirement of 175 units. Tuition for these CP&E courses is at a per-unit level of $220. This represents a discount from the normal per-unit CP&E rate, which applies to all other students enrolled in the CP&E program.

REQUIREMENTS FOR MINOR

Course Work To Be Completed Prior to Senior Standing (19 units)

COST 50. (Introduction to Community Studies) (4)
ED 70. (Community Health Education) (4)
ED 106. (Immersion Experience: Human Service in Diverse Settings) (1)
ED 163. (Introduction to Teaching in a Multicultural Society) (5)
PSYC/LBST 134. (Psychology of Education) (5)

Course Work To Be Completed After Senior Status (17 units)

ED 249. (Interpersonal/Cross-Cultural Communication) (2)
ED 250. (Social Foundations in Education) (3)
ED 253. (First- and Second-Language Acquisition) (3)
ED 325. (ESL Methods and Assessment: Teaching Linguistically Diverse Students) (4)
LBST 197. (Senior Seminar—Teaching for Thinking) (5)

Note: For liberal studies majors, ED 163 and LBST 197 count for major and minor requirements.

COLLEGE OF ARTS AND SCIENCES COURSES

In conjunction with other programs on campus, the College offers experiential education courses for students. These courses integrate experience and work in a specific context with analysis from the perspective of one or more academic disciplines. Additional information on prerequisites, etc., is provided in the *Undergraduate Schedule of Classes* for the quarter in which the courses are offered.

20. SCU and the Arts

Part of the FRC Program, this course introduces students to the University's history and programs with an emphasis on the arts at Santa Clara. Students integrate this course with Western Culture courses offered in the fall quarter. *Prerequisite: permission of instructor.* (1 unit)

21. Emerging Leaders

Designed to introduce first-year students to the concepts of personal leadership and group leadership development. Class integrates readings, in-class exercises, and a variety of student projects. *Prerequisite: permission of instructor.* (1 unit)

22. History and Ethnicity of SCU

Explores the history and ethnicity of the local community of which SCU is a part. Offered in conjunction with the FRC, it includes readings on the local community, class presentations, and visits to sites in the Santa Clara area. *Prerequisite: permission of instructor.* (1 unit)

50. Student Life/R.A. Training

Focuses on community development, multicultural education, facilities/safety education, and mediation skills in the context of the residence-life setting. Open to students training to work within Housing and Residence Life programs. *Prerequisite: permission of instructor.* (1 unit)

60. Ethics and the '96 Election

Explores the relationship between ethics and elections. Examines the ethical implications of voting for or against initiatives on issues such as affirmative action, minimum wage, and political and health care reform in California. (1 unit)

160. Ethics and the '96 Election

Explores the relationship between ethics and elections. Examines the ethical implications of voting for or against initiatives on issues such as affirmative action, minimum wage, and political and health care reform in California. (1 unit)

194. Career Practicum

Helps students identify career options and develop effective search strategies for entry-level jobs. Students complete a series of self-assessment exercises, research various career fields, and conduct informational interviews. (2 units)

RETAIL STUDIES

Dale D. Achabal *(Director)*
Kirthi Kalyanam *(Associate Director)*

The retail studies minor, offered through the Retail Management Institute, provides students with a realistic perception of the retailing industry. The program is open to all University undergraduates. The majority of the courses in the curriculum for the program are required for business majors. Arts and Sciences majors can use general University requirements and electives to fulfill many of the curriculum requirements.

Students entering the retail studies minor continue to major in their field of interest and receive their bachelor's degree in that field. Requirements for the minor follow:

LOWER-DIVISION COURSES

Communications Communications 20 (Public Speaking) or Communications 23 (Oral and Written Communication)
Computer Concepts Operations & Management Information Systems 17 (Introduction to Business Computing), Math 10 (Introduction to Computer Science), or Computer Engineering 4 (Introduction to Programming)
Mathematical Analysis Math 7 (Calculus for Social Science), Math 11 (Calculus and Analytic Geometry I), or Math 30 (Calculus for Business I)
Microeconomics Economics 2 (Principles of Microeconomics I)
Statistics Business Administration 40 (Statistics and Data Analysis I), Math 8 (Introduction to Statistics), or Psychology 40 (Statistical Data Analysis)

UPPER-DIVISION COURSES

Organization & Management Management 60 (People in Organization) or Management 160 (Organization and Management)
Principles of Marketing Marketing 181 (Principles of Marketing)
Retailing Management Marketing 165 (Retail Management)
Internship Marketing 198 (Internship) or department-approved major
Retail Studies Seminars Marketing 168 and 169 (Retail Studies Seminars)

Students acquire hands-on experience by serving a full-time, 10-week management internship with a major retail organization during the summer between their junior and senior years. The internships give students an opportunity to apply classroom theories to actual situations in a work environment, enabling them to practice and refine their managerial skills.

Participants also take a two-quarter Retail Studies Seminar in the fall and winter quarters of their senior year. The seminars cover topics such as product development, merchandise presentation, negotiation, team building, information systems, supply chain management, and promotion analysis. This strong business and liberal arts background prepares the retail management student for the challenges of today's increasingly complex business world.

Nonbusiness majors are encouraged to apply for admission to the program during their freshman or sophomore year to allow time to integrate their course of study in retailing with the requirements in their major field. Business students who have completed the lower-division requirements can enter the program as late as their junior year. To be admitted to the retail studies minor, students must complete an application that will be reviewed by the Retail Management Institute Office, 108 St. Joseph's Hall, 408-554-4960.

MILITARY SCIENCE

Professor of Military Science: Lieutenant Colonel Robert J. Reed *(Chair)*
Assistant Professors: Major Christopher Dozier,
Captain Jeffrey A. Jenkins, Captain Rhonda L. Louko
Chief Instructor: Master Sergeant Artis M. Alvin
Senior Instructor: Sergeant First Class Martin Lopez

The University supports a battalion of Army Reserve Officer Training Corps (ROTC). The program is designed to develop men's and women's management skills and leadership abilities for successful careers in both the corporate world and the military. Instruction is conducted on and off campus.

All courses offered by the Military Science Department are fully accredited and applicable toward fulfilling academic requirements for graduation. Through this voluntary program, the University offers all eligible students the opportunity to obtain an officer's commission in the U.S. Army Reserve, National Guard, or active Army, while earning their college degree.

ACADEMIC CURRICULUM

The military science core curriculum listed below consists of six lower-division classes in the ROTC Basic Course and seven upper-division courses in the ROTC Advanced Course. Cadets may take a summer course (Military Science 24) in lieu of the six lower-division courses.

The professional military education of ROTC cadets consists of two essential components: a baccalaureate degree from Santa Clara University and at least one undergraduate course from each of five designated fields of study. Prior to commissioning, cadets must take at least one course in written communication, military history, human behavior, computer literacy, and math reasoning.

Basic Course

Fundamentals of Leadership and Management Refers to first- and second-year courses (Military Science 11, 12, 13, 21, 22, and 23), which are designed for beginning students who want to qualify for entry into the Advanced Course and for those students who may want to try military science without obligations. A number of popular or challenging extracurricular activities are associated with these courses. A student can also qualify for entry in the Advanced Course by completing only the summer encampment, Military Science 24 (Camp Challenge). Outstanding students in this course may receive a two-year scholarship valued at over $29,000.

Advanced Course

Advanced Leadership and Management Consists of Military Science 131, 132, 133, 134, 141, 142, and 143. It is open to students who have completed the Basic Course or earned placement credit for it (various methods). The Advanced

Course qualifies students for commissions as officers in the U.S. Army. Students must complete all courses numbered greater than Military Science 130, to include Military Science 134, a six-week Advanced Camp during the summer, in sequence, unless otherwise approved by the professor of military science. Students receive $150 per month during the school year. Students who do not desire to compete for a commission as an officer in the Army may take these courses for academic credit with approval by the professor of military science.

LEADERSHIP LABORATORIES

Leadership laboratories, comprising eight hours per course, are required for all ROTC scholarship cadets. Performance during lab periods is reflected in the student's course grade. Labs include activities such as rappelling, terrain navigation, patrolling, marksmanship, drill and ceremonies, and tactical field training exercises.

Labs and Field Exercises

During each quarter of class work, eight hours of lab work are required. Two off-campus exercises involving adventure training, rappelling, rifle marksmanship, leadership training, and survival skills are optional for nonscholarship Basic Course students. Two off-campus exercises for Advanced Course students are mandatory, focusing on leadership and military skills.

FINANCIAL ASSISTANCE

Scholarship Program

Army ROTC offers merit-based scholarships that range from $5,000 to $12,800. The scholarship amount is to be used toward tuition for each year the scholarship is in effect. Four-, three-, and two-year scholarships are available depending on when the student applies. Entering freshmen who bring their four-year scholarships to SCU and who meet certain academic criteria may be eligible for a financial package that will cover the remainder of tuition plus room and board for each year of the scholarship. Three- and two-year scholarships, available to freshman and sophomore students respectively, apply toward tuition for the remaining years on campus. A stipend of $150 per month during the school year is also part of the scholarship.

Scholarship recipients are expected to maintain acceptable standards of academic achievement and personal conduct. They must continuously demonstrate leadership potential. The records of scholarship recipients will be reviewed each quarter by the professor of military science to determine future financial assistance.

Detailed information on the scholarship program may be obtained from the professor of military science.

Simultaneous Membership Program

Juniors and seniors may elect to join Reserve or National Guard units as officer candidates. Cadets receive pay and allowances from both ROTC and their assigned unit while gaining essential military knowledge prior to their commissioning. Cadets participating in this program can earn more than $5,000 in two years.

EXTRACURRICULAR ACTIVITIES

SCU Color Guard Precision marching unit

Ranger Platoon Intensive small-unit operations emphasizing survival training and tactical skills

Airborne Training Army parachute qualification (conducted at Fort Benning, Ga.)

Air Assault Training Helicopter-related tactical operations

COMMISSIONING AS U.S. ARMY OFFICERS

Students must complete the ROTC Program to be eligible for appointment and commissioning as officers in the U.S. Army Reserve. Reserve commissions are tendered in all branches of the Army, except the Medical, Dental, Veterinary, Judge Advocate, and Chaplain Corps. A board of officers determines the branch in which students are commissioned based on their preference, leadership potential, academic background, and the needs of the service.

BASIC COURSES

Freshman

11. Introduction to ROTC

Make your first new peer group at college one committed to performing well and enjoying the experience. Increase self-confidence through team study and activities in basic drill, physical fitness, rappelling, leadership reaction course, first aid, making presentations, and basic marksmanship. Learn fundamental concepts of leadership in a profession in both classroom and outdoor laboratory environments. One 90-minute class per week and eight hours of lab work for the quarter are required. Additionally, physical fitness training sessions are offered up to five times each week. Participation in a weekend exercise away from the University is optional but encouraged. (2 units)

12. Basic Military Skills

Learn/apply principles of effective leading with basic military skills such as first aid, land navigation, and rifle marksmanship. Reinforce self-confidence through participation in physically and mentally challenging exercises with upper-division ROTC students. Develop communication skills to improve individual performance and group interaction. Relate organizational values to the effectiveness of a leader. One 90-minute class per week and eight hours of lab work for the quarter are

required. Additionally, physical fitness training sessions are offered up to five times each week. Participation in a weekend exercise away from the University is optional but encouraged. (2 units)

13. Introduction to Leadership

Introduces basic leadership concepts that may be related to both the military and the civilian workforce. Emphasis on small-unit formations in a tactical scenario, conducting basic tactical drills and movements on the battlefield, basic first aid and survival skills in the wilderness. One 90-minute class per week and eight hours of lab work for the quarter are required. Additionally, physical fitness training sessions are offered up to five times each week. Participation in a weekend exercise away from the University is optional but encouraged. (2 units)

Sophomore

21. Self/Team Development

Learn/apply ethics-based leadership skills that develop individual abilities and contribute to the building of effective teams of people. Develop skills in oral presentations, writing concisely, planning of events coordination of group efforts, advanced first aid, land navigation, and basic military tactics. Learn fundamentals of ROTC's Leadership Assessment Program. One 90-minute session and a required leadership lab, plus optional participation in two 1-hour physical fitness sessions. Participation in a weekend exercise is optional but encouraged. (2 units)

22. Individual/Team Military Tactics

Introduction to individual and team aspects of military tactics in small-unit operations. Includes use of radio communications making safety assessments, movement techniques, planning for team safety/security, and methods or pre-execution checks. Practical exercises with upper-division ROTC students. Learn techniques for training others as an aspect of continued leadership development. One 90-minute session and a required leadership lab, plus optional participation in two 1-hour physical fitness sessions. Participation in a weekend exercise is optional but encouraged. (2 units)

23. Small-Unit Leadership

Preparation for entry into ROTC Advanced Course. Focus on leadership principles, military briefing skills, basic orienteering techniques, basic rifle marksmanship, and small-unit tactics. Topics include orientation to branches of the Army, troop leading procedures, and combat orders. Teaches stress management skills and skills to build self-confidence. One 90-minute session and a required leadership lab, plus optional participation in two 1-hour physical finess sessions. Participation in a weekend exercise is option but encouraged. (2 units)

24. Camp Challenge

A six-week summer camp training at an Army installation in Kentucky. Students receive pay. Travel, lodging, and most meal costs are defrayed by the Army. The environment is rigorous and teaches skills required for success in the ROTC Advanced Course. No military obligation incurred. Open only to sophomores and juniors who have not taken ROTC courses during the regular school year or for ROTC course alignment. Students must pass a physical examination (paid for by ROTC). Completion of Military Science 24 qualifies students for entry into the summer, but spaces are limited by the Army. Candidates can apply for a space anytime during the school year to the summer. Pass/Fail grade only. (4 units)

ADVANCED COURSES

Advanced Leadership and Management
Juniors

131. Leading Small Organizations I

Series of practical opportunities to lead small groups, receive personal assessments and encouragement, and lead again in situations of increasing complexity. Uses small-unit defensive tactics and opportunities to plan and conduct training for lower-division students both to develop such skills and as vehicles for practicing leading. One 90-minute session and a required leadership lab. Three 1-hour physical fitness sessions per week are required. Participation in a weekend exercise is required. (3 units)

132. Leading Small Organizations II

Continues methodology of Military Science 131. Teaches to analyze tasks, prepare written or oral guidance for team members to accomplish tasks, delegate tasks, and supervise. Trains cadets to plan for and adapt to the unexpected in organizations under stress. Examine and apply lessons from leadership case studies. Examine importance of decision making in setting a positive climate that enhances team performance. One 90-minute session and a required leadership lab. Three 1-hour physical fitness sessions per week are required. Participation in a weekend exercise is required. (3 units)

133. Advanced Tactics

Development of skills learned in Military Science 132. A performance-oriented study of small-unit tactics, leadership, and the decision-making process. Emphasis on problem solving. Intense learned application of rifle marksmanship. Students are required to prepare and give oral presentations on military subjects (i.e., military history, current events, etc.). One 90-minute session and a required leadership lab. Three 1-hour physical fitness sessions per week are required. Participation in a weekend exercise is required. (3 units)

134. ROTC Advanced Camp.

A six-week camp conducted at an Army installation at Fort Lewis, Wash. Only open to (and required of) students who have completed Military Science 131, 132, and 133. Students receive pay. Travel, lodging, and most meal costs are defrayed by the Army. The Advanced Camp environment is highly structured and demanding, stressing leadership at small-unit level under varying, challenging circumstances evaluated throughout the camp. Although this course is graded on a Pass/Fail basis only, the leadership and skills evaluations at the camp weigh heavily in the subsequent selection process that determines the type commission and opportunities given to students upon graduation from ROTC and the University. (3 units)

LEADERSHIP AND MANAGEMENT SEMINARS

Seniors

141. Leadership Challenges and Goal-Setting

Plan, conduct, and evaluate activities in the ROTC Cadet Organization. Articulate goals, activate plans. Assess organizational cohesion and develop strategies to improve it. Develop confidence in skills to lead people and manage resources. Learn/apply various polices and programs in this effort. One 90-minute session and a required leadership lab. Three 1-hour physical fitness sessions per week are required. Participation in a weekend exercise is required. (3 units)

142. Transition to Lieutenant

Continues methodology of Military Science 141. Identify and resolve ethical dilemmas. Refine counseling and motivating techniques. Examine aspects of tradition and law as related to leading as an officer in the Army. Prepare for a future as a successful Army lieutenant. One 90-minute session and a required leadership lab. Three 1-hour physical fitness sessions per week are required. Participation in a weekend exercise is required. (3 units)

143. Precommissioning Seminar

Continuous development of leadership and critical thinking skills. Instruction includes ethics, military justice, the Army supply system, and other subjects to assist the transition to the Officer Corps. Cadets work as a battalion-level staff to plan and coordinate leadership labs and field-training exercises. One 90-minute session and a required leadership lab. Three 1-hour physical fitness sessions per week are required. Participation in a weekend exercise is required. (3 units)

UNIVERSITY INSTITUTES

The University offers institutes that include multidisciplinary or related courses on a theme developed by faculty members from different disciplines in the College of Arts and Sciences, the Leavey School of Business and Administration, and the School of Engineering. In addition to academic courses, institutes usually include public lectures, dramatic productions, films, and social events. The University sponsored the Institute on War and Conscience and the Institute on the Family in fall 1982 and winter 1984, respectively. Other institutes have included Poverty and Conscience, Technology and Society, the Bicentennial of the U.S. Constitution, Human Rights and Social Justice, and the Environment and the Human Community. Justice and the Arts: The Persistence of Hope was held during the winter and spring 1996.

INSTITUTE FOR PARALEGAL EDUCATION

Susan B. Erwin *(Director)*

The Institute for Paralegal Education, founded in 1977, is administered by the School of Law. The institute operates on a quarter system and offers day, evening, and weekend courses. Students may attend on a full- or part-time basis. Four different program options are available:

Certificate in Paralegal Studies In order to be awarded the certificate, students must meet the entrance requirements and complete the required courses for their category. Categories of admission to the Certificate Program are:

Category One Students must have at least a bachelor's degree and must take 12 courses.

Category Two Students must have an associate's degree or general education completed, plus work experience. These students must take 16 courses.

Category Three Students must have a combination of education and significant work experience and must take 20 courses.

Specialty Certificates Students who have completed their training in paralegal studies can supplement their education by specializing in

Corporate Law
Probate and Estate Planning
Intellectual Property Law
Litigation
Environmental Law

Graduates from the Institute for Paralegal Education at SCU may take supplemental courses at half the regular tuition fee.

Open Enrollment All courses are available to people interested in the study of law and legal procedure. No formal admission procedures are required.

Saturday Seminars Seminars are offered each quarter in specialized or advanced legal subjects. The curriculum is extensive and varied. All students are required to take courses in the areas of basic law, writing skills, computer skills, basic procedural law, basic substantive civil law, basic public law, and electives. The institute offers over 75 courses per year, allowing students to construct a program of studies to meet their individual needs.

One course option is the internship, wherein students are placed in law firms, public services offices, and corporations as paralegal trainees. Students may elect to complete 90 or 180 hours on their internship site and can choose one or two different placements.

Job placement assistance is available to all students and graduates of the institute.

A Paralegal Open House is held each quarter, featuring information about the paralegal career field and SCU's program, panel discussions by faculty, graduates, and the local paralegal association and campus tours. For more information, call 408-554-4535 or E-mail to serwin@scuacc.scu.edu or visit the Web site at www.scu.edu.

MARKKULA CENTER FOR APPLIED ETHICS

Santa Clara University established the Center for Applied Ethics in 1986, and renamed it the Markkula Center for Applied Ethics in 1995, to heighten awareness of ethical issues and to improve ethical decision making. The Markkula Center operates as a unique community of faculty, staff, students, and off-campus advisers and participants with the common goal of helping people develop strategies for understanding and resolving the ethical dilemmas that confront them. The center supports interdisciplinary teaching, research, and community programs in applied ethics. Programs for students include forums that provide a framework for value-based decision making in their personal and professional lives; involvement in the student-run Biomedical Ethics Club; and, in collaboration with the Center for Student Leadership, workshops that provide student reflection leadership training. The Markkula Center also sponsors public symposia that bring together influential speakers, the SCU community, and the general public to examine controversial issues of national concern from an ethical perspective. In addition, the Markkula Center publishes a quarterly magazine, *Issues In Ethics*, and maintains a Web site, the *Ethics Connection* (www.scu.edu/ethics), to facilitate thoughtful reflection and engage in dialogue about matters of public debate. Other activities and services include programs for professionals, course development workshops, ethics consultations for individuals and organizations, and providing an ethics resource center. The Markkula Center does not tell people what to think but suggests what to think about and how to think it through.

EASTSIDE PROJECT

Pia Moriarty *(Director)*
Rosalie Ledesma *(Student Learning Coordinator)*

The Eastside Project community-based learning program provides students with a unique opportunity to supplement their education through interaction with marginalized members of local and international communities. Eastside Project functions as a bridge, establishing contact between the underserved populations of the area and the University. Santa Clara students visit such service agencies as convalescent hospitals, homeless shelters, centers for children of the working poor, and immigrant service centers.

Participants in the placements go not as volunteers but as students, just as they may go to the library or a professor's office. Students are placed in organizations where they can both teach and learn through their experiences. Founded with the intent of melding educational theory with practice, Eastside Project attempts to

evoke in students a spirit of service and commitment to social justice that will carry over into their careers as well as their private lives. Eastside Project integrates experience in the community into the curriculum of the University. Over 500 students enrolled in as many as 30 classes participate in the program each quarter. Professors either require students to participate in the program or provide it as an option for completion of the course.

AEROSPACE STUDIES

Professor: Lieutenant Colonel Kirk Brown *(Chair)*
Assistant Professors: Captain Cathy Gordon, Captain Mike Savage, Captain Robert Siegle

Santa Clara University has entered into an agreement with San Jose State University that permits Santa Clara students to enroll in a program leading to a commission as a second lieutenant in the U.S. Air Force. Academic instruction includes Air Force organization, history, officer skills, leadership and management, and national security policy and issues. For those who qualify, Air Force ROTC scholarships, which pay for tuition, books and supplies, laboratory fees, and an allowance of $150 per month during the school year, are also available.

The Air Force Reserve Officer Training Program (AFROTC) at San Jose State University offers a high-quality educational experience structured for all college students. Students find out firsthand about Air Force scholarships and career opportunities.

Air Force ROTC classes are located at San Jose State University. Classes begin at San Jose State University on Aug. 28, 1997, for the fall semester. Those wishing detailed information on enrollment and scholarships, should contact the Aerospace Studies Department at San Jose State University at 408-924-2960.

LOWER-DIVISION COURSES

1A, B. The Air Force Today

Today's Air Force officer and how he/she fits into the Air Force as a whole. Role of the officer as a professional. Air Force doctrine and structure. Year course. (1 unit per semester)

2A, B. The Development of Air Power

Development of air power from balloons and dirigibles through the jet age. Employment of air power from peacetime relief missions and civic action programs through the post-Vietnam era. Year course. (1 unit per semester)

UPPER-DIVISION COURSES

131A, B. Air Force Management and Leadership

131A. Communicative skills at the junior-officer level and management principles.

131B. Executive functions and problem-solving tools, practices, and controls. Differing styles of leadership. Year course. *Prerequisites: AS 1A, B; AS 2A, B; or as determined by department chair.* (3 units per semester)

141A. National Security Policy Process

Role of the Air Force as an instrument of U.S. national security and the relationships with various governmental institutions. Global perspective to include regional studies of Russia, Asia, Central and South America, Middle East, and Africa. *Prerequisite or co-requisite: AS 131B.* (3 units)

141B. Preparation for Active Duty

Examination of advanced-leadership ethics and Air Force doctrine. Special topics of interest focus on the military as a profession, officership, military justice, and preparation for active duty. *Prerequisite or co-requisite: AS 131B.* (3 units)

180. Individual Studies

Application of theory and instruction in field and staff exercises. *By arrangement.* (1–3 units)

Leadership Laboratory

Dynamic environment where cadets develop leadership and management skills by planning, organizing, directing, and coordinating exercises. *Mandatory 1–2 hours per week for officer candidates.*

10

Academic Information and Regulations

STUDENT RESPONSIBILITY

Students are personally responsible for knowing all the academic regulations affecting their program of study and for completing all degree requirements as set forth by the University, their College or School, and academic department(s). Failure to understand these regulations and requirements does not relieve a student of responsibility.

GENERAL GRADUATION REQUIREMENTS

Candidates for the degree of Bachelor of Arts (B.A.) or Bachelor of Science (B.S.) in the College of Arts and Sciences and the Bachelor of Science in Commerce (BSC) in the Leavey School of Business and Administration must

1. complete a minimum of 175 quarter units (engineering physics majors complete a minimum of 197 quarter units); no more than 88 quarter units of which may be satisfied with approved transfer credit;
2. complete a minimum of 60 quarter units of upper-division courses, after completing 88 quarter units;
3. attain an average of C (2.0) in both their major and minor subjects and their total course load;
4. meet the residency requirement of a minimum of three quarters and 45 units at the Santa Clara campus after achieving junior standing;
5. fulfill the University Curriculum requirements; and
6. fulfill the minimum course requirements of both their college or school and their major departments.

Candidates for the degree of Bachelor of Science (B.S.) in the School of Engineering must

1. complete a minimum number of quarter units as specified by the major department; no more than half of which may be satisfied with approved transfer credit;
2. attain an average of C (2.0) in both their major and minor subjects and their total course load;
3. meet the residency requirement of a minimum of three quarters and 45 units at the Santa Clara campus after achieving junior standing;

4. fulfill the University Curriculum requirements; and
5. fulfill the minimum course requirements of both their school and their major departments.

Specific course requirements to meet each of these goals are outlined in the sections for each College or School.

Honors at Graduation

The candidate for an undergraduate degree with a grade point average between 3.45 and 3.69 graduates cum laude; one with a grade point average between 3.70 and 3.89 graduates magna cum laude; one with a grade point average of 3.90 or higher graduates summa cum laude.

Honors are based on all graded undergraduate courses attempted at Santa Clara University and elsewhere. Transfer students must complete at least two full years or 90 units at the University to be eligible for honors, and no honors will be awarded above those merited by the student's record at Santa Clara. An indication of honors at graduation contained in the commencement program is unofficial. The final determination will be made after a review of all completed undergraduate courses.

Second Bachelor's Degree

A student may earn a second bachelor's degree. For students whose first bachelor's degree is from Santa Clara, the conditions are (1) an academic record showing a strong probability of success in this undertaking; (2) a projected program of study that will amass at least 45 Santa Clara campus units beyond the first bachelor's degree; (3) following the requirements in effect at the original matriculation date, provided the student is pursuing the second bachelor's degree concurrently or without interruption; and (4) written approval of the appropriate dean submitted to the Student Records Office. Students returning after an absence of fewer than five years are subject to the above conditions, with the exception that they follow the requirements in effect upon re-entry. Students may not repeat their first degree; those interested in a further program of study within their first degree are advised to work toward a second major.

If more than five years have passed since the granting of the first bachelor's degree, a formal application for admission must be filed with the Office of Undergraduate Admissions. Candidates are subject to the curriculum requirements contained in the *Undergraduate Bulletin* in effect at the time of re-entry.

All candidates whose first degree is from an institution other than Santa Clara must file a formal application for admission with the Office of Undergraduate Admissions and will be considered on a space-available basis. Candidates are subject to the curriculum requirements contained in the *Undergraduate Bulletin* in effect at the time of entry.

Normally, financial aid other than student loans is not available to students seeking a second bachelor's degree.

Second Major or Academic Minor

A student may declare a second major or an academic minor by obtaining the approval of the department chair. The conditions governing the declaration of a second major or an academic minor and the required form may be obtained from the Student Records Office. Students are subject to the *Undergraduate Bulletin* requirements in effect at the time of declaration. Requirements for a second major or minor become as binding as those of a primary major and must be completed before a degree will be awarded.

A student may declare a second major in any department of the University with the exception that students in the Leavey School of Business may declare only one major in that school.

Minors are available in most departments in the College of Arts and Sciences. The requirements are listed in the department's section of Chapter 5 of this bulletin. General minors in business and engineering and computer engineering are also available and requirements may be obtained in the appropriate dean's office. Declaration must be approved by that dean.

Nine interdepartmental minors are offered by the University. Descriptions and requirements are given in Chapter 9 of this bulletin.

REGISTRATION

Registration for classes precedes each of the three quarters of the academic year via the telephone registration system (T-REG). The registration dates, procedures, and instructions are published in the quarterly undergraduate *Class Schedule.* An appointment time and PIN are mailed to continuing students prior to each registration period. Financial arrangements for the payment of tuition and fees must be made prior to registration or as otherwise announced by the University.

The University reserves the right to deny registration to any student for reasonable cause.

Registration Changes

Through the first week of each term, students are permitted to alter their original registration schedule by following the regular procedures established for this purpose by the Student Records Office and stated in the quarterly *Class Schedule.* During the second, third, and fourth weeks of classes, a student may withdraw from a class via T-REG without a W notation appearing on the academic record. From the fifth to the end of the ninth week of classes, a student is permitted to withdraw from a class by submitting a signed course withdrawal form in the Student Records Office, but a W notation will appear on the academic record. No withdrawal is permitted during the final week of classes. Students may receive a grade of F in a class if they fail to withdraw formally.

Course Numbering

Lower-division courses are numbered 1–99; upper-division courses, 100–199. Most undergraduate courses in the College of Arts and Sciences and the Leavey School of Business and Administration carry 4 or 5 units of academic credit. In the School of Engineering, course values range from 3 to 5 units each.

Course Restrictions

Students who enroll for a course for which they are not eligible are subject to administrative withdrawal from that course. That is, during the add/drop period, the instructor may notify the registrar to drop lower-division students who registered in upper-division courses; to drop students who have not satisfied the prerequisite(s) stated in the bulletin or class schedule; or to drop students without the instructor's permission as specified in certain courses.

Lower-division students may not enroll in upper-division courses without the written approval of their dean, excluding engineering courses in the major program. With prior approval by language faculty, lower-division students having proficiency or adequate prior study of a classical or modern foreign language may enroll in upper-division language courses.

Upper-division units earned prior to achieving junior standing do not satisfy the University requirement of completing 60 upper-division units after completing 88 units.

Unit Overload

Students' quarterly course load may not exceed 19 units unless their cumulative grade point average at Santa Clara is at least 3.3 or they obtain written permission from the dean. Students who do not meet the above criteria will not be registered for the additional courses. One 2-unit course or two 1-unit courses are not counted as overload units. All students may add overload units only during the add period, including those with a 3.3 grade point average.

Repetition of Courses

With the written approval of the academic dean of their School or College, students may repeat a course in which they receive a grade of D. All courses, whether repeated or not, are included in the calculation of grade point averages. However, units needed for graduation will be awarded only once for each course passed.

A few courses are designated as repeatable, and students will receive a grade and units toward graduation for each successful completion.

Independent Study

Under certain conditions, upper-division students may pursue independent study through directed reading, directed research, practica, or internships. To qualify, a student must have demonstrated a sufficient knowledge of the academic discipline involved to make independent study both possible and beneficial. No more than four independent study courses can be used to satisfy graduation requirements, and no more than one independent study course may be taken per term.

Students wishing to enroll in independent study courses must submit the Petition for Independent Study form, together with the required materials and approvals, to their academic dean at least one week prior to the date of registration. The forms are available from the offices of the academic deans and the Student Records Office.

Auditing Courses

Students may audit one course in addition to their regular study load. Permission to audit a course will be given only at the end of the late registration period, and then only if space is available in the class. Although no credit is assigned for an audited course, the successful completion of an audit will be indicated on a student's transcript by the notation AUD. A maximum of three courses may be audited. For those students not enrolled full time, a $250 course audit fee is charged.

Challenging Courses

Students may challenge certain courses to satisfy specific subject requirements for graduation. However, units earned in this manner may neither be counted toward the total needed for graduation, nor used to satisfy the residency requirements.

To challenge a course, the student takes a special three- to four-hour examination on the material covered by that course and meets any additional requirements. All courses listed in the *Undergraduate Bulletin* may be challenged except those involving laboratory, studio, or specialized group work and those whose descriptions in the catalog are followed by the letters NCX.

In order to be eligible to challenge a course, students must (1) have completed at least one term at Santa Clara; (2) have a cumulative grade point average of at least 3.3; and (3) have received the permission of the instructor and academic dean of the School or College in which the course is offered. The petition form is available from the Student Records Office. Only currently enrolled students are eligible to challenge a course.

Challenge examinations are arranged by the instructor. The petition form must be submitted to the Student Records Office at least two weeks prior to the examination. A $50 fee is charged for each course challenged.

Challenged courses may not be graded P/NP, and no more than one course may be challenged each term.

GRADING SYSTEM

Grades reflecting the quality of a student's work are reported as follows: A (excellent), B (good), C (adequate), D (barely passing), F (not passing), P (pass), NP (no pass), and I (incomplete).

The grades A, B, C, and D may be modified by (+) or (-) suffixes, except that the grade of A may not be modified by a (+) suffix. Grade point values per unit are assigned as follows: A = 4.0; A- = 3.7; B+ = 3.3; B = 3.0; B- = 2.7; C+ = 2.3: C = 2.0; C- = 1.7: D+ = 1.3; D = 1.0; D- = 0.7; and F, I (incomplete), P (pass), NP (no pass), AUD (audit), N (continuing work), NR (no grade reported by instructor—this notation is assigned by the Student Records Office—and W (withdrawn) = 0. Unit credit, but not grade point credit, is awarded when the grade of P is assigned.

Students must achieve a grade point average of 2.0 in their declared major(s) and academic minor(s), as well as a cumulative grade point average of 2.0 or higher in all courses in order to be eligible for graduation. A grade point average is determined by multiplying each grade point value by the number of quarter units assigned to the course, adding these grade point units from all courses taken, and dividing this sum by the total number of quarter units for which letter grades were reported.

Student grade reports, issued at the end of each quarter, indicate the grade point average earned during the quarter just completed as well as the cumulative grade point average the student has earned to this point.

Pass/No Pass Option

A junior or senior may choose to take an *elective* course on a pass/no pass (P/NP) basis. (An elective course is one other than a University, School, College, or department requirement.) The pass/no pass choice can be made up to the final day of adding classes and is irreversible.

A grade of P signifies that the quality of work done is equivalent to a letter grade of C or higher, while a grade of NP denotes work at the level of C-, D, or F. Courses taken under the pass/no pass option will fulfill graduation unit requirements but do not affect grade point averages.

Students may elect only one course per quarter on a pass/no pass basis. The units accrued for up to a maximum of six eligible courses can be applied to the graduation unit requirement.

Incomplete Grades

A student may receive an incomplete grade (I) in a course if, because of extraordinary circumstances beyond the student's control, some essential portion of the assigned work has not been completed before the final examination. An Incomplete Contract must be completed and signed by both the student and the instructor before an I will be assigned. The unfinished work must be completed and given to the course instructor within three weeks of the beginning of classes in the next scheduled term (not the student's next term of enrollment), excluding summer session, unless extraordinary circumstances require an extension. All ex-

tensions of time must be in writing and approved by the registrar; they should not exceed a period longer than two academic quarters after the I was assigned, excluding summer session. Approval for an extension must be obtained and forwarded to the Student Records Office by the instructor within the three-week period mentioned above.

Change of Grade

Only the instructor in charge of a course may assign grades. All grades, except incompletes, become final when they have been assigned and reported to the Student Records Office. An instructor may report to the Student Records Office a correction of a final grade only if a clerical or procedural error was made in assigning, transmitting, or recording the original grade. A grade may not be changed as a result of re-evaluation, re-examination, or the submission of additional work after the term ends. Any grade change must have the approval of the department chair and the dean. No grade may be changed after one year.

STUDENT CLASSIFICATION

Students are classified by the number of quarter units they have completed with passing grades. Lower-division students are considered freshmen if they have completed fewer than 44 units, and sophomores when they have completed 44 but fewer than 88 units. Upper-division students are considered juniors when they have completed at least 88 but fewer than 131 units, and seniors when they have completed at least 131 units.

For academic purposes, students taking fewer than 12 units are considered part-time students. For tuition purposes, however, a part-time student is defined as a lower-division student taking fewer than three (3) term courses or an upper-division student taking fewer than two (2) term courses regardless of the unit value of the courses.

Admission to the University as a part-time student requires approval by the dean of the College or School to which the student has applied. Six units is the minimum number of units for consideration of at least half-time enrollment. Generally, students enrolled less than full-time, but at least half-time, may be eligible only for Federal Direct Loans.

Students admitted to the University as nonmatriculants (nondegree) may enroll in courses after approval by the dean of the College or School and then only on a space-available basis.

ACADEMIC STANDING

To be in good academic standing, a student must maintain a cumulative grade point average equal to or higher than 2.0 based on all courses taken at Santa Clara and must have completed more than the minimum number of units, as specified below. Failure to meet these conditions may result in academic probation or disqualification from future registration at the University.

Probation

Students who have completed at least three quarters of academic work at Santa Clara or elsewhere are subject to academic probation if their cumulative grade point average is lower than 2.0 based on all courses taken at Santa Clara.

Students who have not yet completed three quarters of academic work at Santa Clara or elsewhere normally are not subject to academic probation as long as their cumulative grade point average is at least 1.6 based on all courses taken at Santa Clara.

Full-time students are also subject to academic probation if they fail to make reasonable progress toward their degree. Thus, they are subject to academic probation if

1. they have not completed at least 36, 76, 115, or 160 quarter units by the end of their third, sixth, ninth, or 12th quarters of residency, respectively; or
2. they have completed fewer than 36 quarter units in the past three quarters of residency.

Disqualification

Students are subject to disqualification from further registration at the University if

1. they remain on probation for more than two consecutive quarters; or
2. their cumulative grade point average falls below 1.6; or
3. they complete fewer than 30, 64, 100, or 150 quarter units by the end of their third, sixth, ninth, or 12th quarters of residency, respectively.

Reinstatement

Reinstatement after disqualification from the University is rarely permitted, and then only on the recommendation of the dean of the School or College in which the student was enrolled. It also requires favorable action by the Committee on Admissions.

Requests for reinstatement should be addressed to the appropriate dean or director of academic advising and must include a description of any activities during the period of disqualification that would indicate that an improved academic performance can be expected in the future.

Note: Ordinarily, a student may not apply for reinstatement within a year of the date of disqualification. The application will be considered only if the student's academic deficiencies can be removed within a reasonable time.

Withdrawal

Students who wish to withdraw from the University during a quarter must complete a withdrawal form and an exit interview at the Student Resource Center. If the formal requirements for withdrawal are met, the student's registration will be canceled without academic penalty. A withdrawal notation (W) will be

assigned for each course from which the student withdraws after the fourth week of the quarter. Students who leave the University during a quarter without formally withdrawing are subject to failing grades in all courses in which they were registered and are ineligible for refund of fees.

Any student leaving the University at the conclusion of any quarter also should complete the standard withdrawal process.

No withdrawal, either during or at the end of a quarter, will be considered complete unless the student has met all the financial obligations at the University. Students attending the University on deferred payment plans or with student loans must also clear their financial obligations with Student Loan Services. Students who have unpaid University bills will not receive academic transcripts until their account has been settled.

Re-enrollment

Students who leave the University may return without filing a formal application for readmission if they meet *all* of the following conditions:

1. They left the University in good standing.
2. They plan to return to the same University School or College.
3. They are returning within five years.
4. They notify the Student Records Office in writing. If the notification is received in time, they may participate in advance registration.

Re-enrolling students who have attended another college or university are required to forward to the Student Records Office an official transcript of all work completed during their absence. Re-enrolling students may be subject to the curriculum requirements contained in the *Undergraduate Bulletin* in effect at the time of re-entry.

TRANSFER WITHIN THE UNIVERSITY

Students wishing to transfer from one School or College to another within the University must file a petition for change of program with the associate dean of the School or College they wish to enter. The action taken as a result of the petition will depend on the applicant's past academic record and on the availability of space within that School or College. No student whose grade point average is lower than 2.0 will be considered for transfer.

CONCURRENT ENROLLMENT

Concurrent enrollment at another academic institution is not allowed. Approval for an exception will be granted by the academic dean only for extraordinary reasons.

UNITS TAKEN AT OTHER INSTITUTIONS

After enrolling at Santa Clara, students may earn no more than 10 quarter units at other regionally accredited colleges or universities to count toward graduation. However, these units may not be counted as fulfilling a University or College of Arts and Sciences core requirement or a requirement of the student's major. Credit will be awarded only for courses with a grade of C or higher. No credit will be awarded for courses with a CR, P, or S grade. All courses require *prior* approval from the department chair of the student's major, the head of academic advising, and the chair of the department offering the equivalent SCU course. Grades for units earned at other institutions are not included in a student's Santa Clara academic history, nor do they affect the Santa Clara grade point average. Units and grades earned in Santa Clara University–affiliated Studies Abroad and American University programs are included in the student's Santa Clara academic history and grade point average and may be used to meet Santa Clara requirements provided prior approval is obtained by the appropriate department chair or program director. They do not, however, satisfy the University residency requirement.

ATTENDANCE

Students are expected to attend all classes. Penalties for absences are left to the discretion of individual instructors. Students are held accountable for all assignments in each course, whether or not the assignments were announced during an absence. Students not in attendance on the first day of class are subject to administrative withdrawal from classes.

WRITTEN EXAMINATIONS

Written examinations are usually given at the middle and end of each term. Grade reports are issued only at the end of the term. Faculty are expected to apprise students of their course progress at reasonable intervals. Some measurements of progress should take place by the fourth week of instruction.

ACADEMIC INTEGRITY

The University is committed to academic excellence and integrity. Students are expected to do their own work and to cite any sources that they use. A student who is guilty of dishonest acts in an examination, paper, or other required work for a course, or who assists others in such acts, may receive a grade of F for the course. In addition, a student guilty of dishonest acts may be immediately dismissed from the University.

A student who violates copyright laws, including those covering the copying of software programs, or who knowingly alters official academic records from this or any other institution is subject to similar disciplinary action.

STUDENT CONDUCT CODE

As an institution of higher education rooted in the Jesuit tradition, the University is committed to creating and sustaining an environment that facilitates not only academic development but also the personal and spiritual development of its members. This commitment of the University encourages the greatest possible degree of freedom for individual choice and expression, with the expectation that individual members of the community

- will be honest;
- will demonstrate respect for self;
- will demonstrate respect for others; and
- will demonstrate respect for the law and University policies, regulations, their administration, and the process for changing those laws, policies, and regulations.

ACADEMIC ADVISING

Santa Clara's advising system is designed to help students develop coherent goals and objectives for their academic program. Advising encompasses a wide range of activities including accurate information about University requirements, identification of relevant resources and programs within the University, and assistance with plans for careers and/or graduate school. The following sections provide a sketch of the advising process and highlight some of the University's pre-professional advising programs. Students should consult with individual departments and program offices for additional information related to advising.

Required Advising

Academic advising is required of all freshman and sophomores during the published annual advising period in May. Those who do not comply will not be permitted to register for the next term. Juniors and seniors are expected to consult regularly with their advisers to review progress toward graduation (including the Junior Degree Audit), discuss academic goals and programs, explore career options, etc. All students are encouraged to meet with their adviser each quarter to discuss course selection. Procedures for setting meetings with advisers may vary among schools or colleges. Students should check with their assigned adviser or the dean's office for more complete information.

Academic Adviser

Each incoming student is assigned to a specific faculty member who serves as the student's academic adviser. Usually the assignment is made according to the student's declared major or according to a general academic interest indicated by the student. The student should declare a major by the end of the sophomore year and may also, with the permission of the appropriate dean, switch advisers if personal or academic needs warrant such a change. In addition, students may meet with the director of academic advising for their School or College.

Health Sciences Advising

The College of Arts and Sciences sponsors a Health Sciences Advising Program for students interested in preparing for careers in health-related fields. Interested students should contact the Health Sciences Advising Office in the Ramos Center (408-554-2169). Following is a brief account of the more popular health sciences programs.

Pre-Medical

Santa Clara University has an excellent reputation for preparing students for medical school. Although Santa Clara has no "pre-med major" per se, the courses prescribed by the Council of Education of the American Medical Association can be incorporated into a variety of majors at Santa Clara.

Santa Clara's broad liberal arts program serves to develop the communication, personal, and analytical skills necessary for success in medical school and the practice of medicine. Santa Clara also provides ample opportunity to acquire the solid academic foundation in the sciences required by medical schools. Most medical schools specifically require

- one year of general chemistry with lab (e.g., Chemistry 5, 6, and 10);
- one year of organic chemistry with lab (e.g., Chemistry 35, 36, and 37);
- one year of physics with lab (e.g., Physics 20, 21, and 22);
- one year of college-level mathematics, which may include calculus (e.g., Math 11, 12, and 13); and
- a minimum of one year of biology with lab (e.g., Biology 91, 92, and 93), plus several upper-division biology courses, each with lab.

Medical schools also expect candidates to have completed a year of English composition (e.g., English 1 and 2, plus an additional composition course, such as English 178), as well as classes in the social sciences (e.g., psychology, sociology, anthropology, etc.). The goal of this course work is to improve communication and critical-thinking skills.

At Santa Clara, students work closely with their academic advisers and Health Sciences Advising Program (HSAP) to select courses to prepare them for a career in medicine. In addition to courses in the University core curriculum, freshmen pre-medical students typically focus on chemistry (5 and 6) their first two quarters. They begin the biology core (91) in the spring quarter after they have made the initial adjustment to college. In the sophomore year, students take organic chemistry (35, 36, and 37), complete the biology core (92 and 93), and begin upper-division biology in the spring quarter. Junior students take physics (20, 21, and 22) along with upper-division biology courses. At this time, students are well prepared to take the Medical School Admissions Test (MCAT), which is given in April and August each year. Seniors complete the requirements for their major as well as those for the University Core.

Pre-Dental

Several departments offer pre-dental programs meeting all the requirements for entrance into dental schools. The health sciences advisers, in conjunction with the students' own academic advisers, will assist them in preparing their own programs in the major of their choice. For further information about undergraduate pre-dental preparation at Santa Clara, contact the pre-dental advising program office (408-554-2169). *Admission Requirements of U.S. and Canadian Dental Schools* is published each year and is available from the American Association of Dental Schools, 1625 Massachusetts Ave. N.W., Washington, D.C. 20036.

Allied Health Areas

Santa Clara graduates increasingly are pursuing careers in the allied health fields—optometry, pharmacy, physical therapy, etc. Since undergraduate requirements for each area may differ, students are encouraged to meet with the health sciences adviser to discuss options in these fields as well as the appropriate course work to prepare for further study.

Pre-Law

There is no particular major or pre-law program required to qualify for law school. Admissions officers in the best law schools recommend undergraduate preparation in a major that requires discipline, clarity of thought, and precision in written and oral work. In addition to the College and major requirements, elective courses in English, history, philosophy, speech, the social sciences, and the fundamentals of accounting provide valuable training for students intending to pursue a career in law. Early in their undergraduate careers, these students should consult their advisers, or one of the specially designated pre-law advisers, to formulate a program designed for their specific needs and career goals. For further information students should contact the pre-law advising program office (408-554-2169).

Pre-Teaching

Liberal studies is the academic major for undergraduates interested in a career in elementary school teaching. The program, approved by the California State Commission on Teacher Credentialing, encompasses five broad areas: (1) English and communication; (2) mathematics and natural sciences; (3) social sciences; (4) humanities and fine arts; and (5) child development. Students who would like to teach at the elementary level and do not complete this major must take the state subject-area examination.

Students interested in becoming secondary school teachers must take either the state examination in the subject they intend to teach or complete an approved Subject-Matter Preparation Program that exempts them from the examination. Single-subject pre-teaching programs are available in 10 areas: combined sciences, English, social sciences, mathematics, art, music, Spanish, French, German, and business. Students should contact Nedra Shunk, the coordinator of the

Single-Subject-Matter Preparation programs (408-554-2237), for information on available programs and careers in teaching.

Students should consult the director of the Teacher Education Program for information on fifth-year programs.

Refer to the Division of Counseling Psychology and Education section of this bulletin for further information on teacher education at Santa Clara.

STUDENT RECORDS

University policy relating to student records complies with the Family Educational Rights and Privacy Act of 1974 (FERPA). Accordingly, the University may release directory information to any person on request, unless a student requests in writing that directory information be kept confidential. A student's directory information is designated as follows:

1. Name
2. Gender
3. Address (campus, local and/or permanent)
4. Telephone number
5. Date and place of birth
6. Major field of study, classification, dates of attendance, degrees, and honors received
7. Most recent previous educational institution attended
8. Past and present participation in officially recognized activities including intercollegiate athletics
9. Name, weight, and height of participants on intercollegiate athletic teams

During the registration period and throughout the academic year, students may request in writing, through the Student Records Office, that directory information be kept confidential. Once filed, the request remains in effect until the beginning of the next academic year, or a shorter period, if designated by the student.

Certain records are excluded by law from inspection, specifically those created or maintained by a physician, psychiatrist, or psychologist in connection with the treatment or counseling of a student. Parents' financial information, including statements submitted with scholarship applications, is also excluded by law from inspection. Third parties may not have access to educational records or other information pertaining to students without the written consent of the particular student about whom the information is sought.

Former or current borrowers of funds from any Title IV student loan program should note carefully that requests for nondisclosure of information will have no effect on preventing Santa Clara University from releasing information pertinent to employment, enrollment status, current address, and loan account status to a school lender, subsequent holder, guarantee agency, U.S. Department of Education, or an authorized agent.

Students have the right to inspect and review their educational records at the following offices:

1. Official academic records, including application forms, admission transcripts, letters of acceptance, and a student's permanent academic record are on file and maintained in the Student Records Office.
2. Working academic files are also maintained by the deans in their respective offices.
3. Records related to a student's nonacademic activities are maintained in the Office of the Dean of Students.
4. Records relating to a student's financial status with the University are maintained in the various Student Financial Services offices.

Students have the right to request the amendment of their educational records to ensure that they are not inaccurate, misleading, or otherwise in violation of the student's privacy or other rights. Students may direct complaints regarding academic records to the dean of the college or school in which they are enrolled, to the director of Student Records and Financial Services, or to the University Registrar. In addition, students have the right to file with the U.S. Department of Education a complaint concerning alleged failures by Santa Clara University to comply with the requirements of FERPA. Written complaints should be directed to the Family Policy Compliance Office, U.S. Department of Education, 600 Independence Ave., S.W., Washington, D.C. 20202-4605. Copies of Santa Clara University's student records policy are available from the Student Records Office, Walsh Administration Building.

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University Honor Societies and Awards

Santa Clara University sponsors numerous honor societies and awards to recognize and celebrate significant achievement by students. Some are University-wide, others are located in the college and schools, and some are within specific departments. Students are encouraged to learn more about these opportunities early in their careers at Santa Clara.

HONOR SOCIETIES

Santa Clara University is proud to host 19 prestigious national honor societies in the liberal arts, sciences, business administration, and engineering. These societies reflect a long tradition of academic excellence, tracing their origins back at least 50 years. Some date from the 19th century and one dates from the 18th.

Alpha Sigma Nu

Alpha Sigma Nu, the national Jesuit honor society, was founded at Marquette University in 1915. The Santa Clara chapter was installed in 1942, and there are chapters at 28 universities and colleges across the country. Alpha Sigma Nu upholds the Jesuit values of academic excellence and service to the University and the community. Each year new members are selected for their commitment to excellence in scholarship and service.

Beta Beta Beta

Beta Beta Beta Biological Sciences Society, the national honor and professional society for students of the biological sciences, was founded in 1922. The Santa Clara chapter was established in 1994. Its main emphasis is to stimulate scholarship, disseminate scientific knowledge, and promote biological research. Regular membership is reserved for those who achieve a superior academic record and demonstrate a special aptitude for the life sciences. Associate membership is for students with exceptional potential who are just beginning formal study and research in biology.

Beta Gamma Sigma

Beta Gamma Sigma, the national honor society for students of business, was founded in 1913. It currently has more than 160 chapters and a total membership exceeding 100,000, and holds a position analogous to that of Phi Beta Kappa in the arts and Sigma Xi in the sciences.

Eta Sigma Phi

Eta Sigma Phi, the national classics honorary society, was founded at the University of Chicago in 1914 and became a national organization in 1924. Its primary purposes are to further the spirit of cooperation and good will among members of the classics profession, to stimulate interest in the study of the classics, and to increase knowledge of the art and literature of ancient Greece and Rome. The Epsilon Psi chapter of Eta Sigma Phi was founded at Santa Clara University in 1987. To be eligible for nomination to membership, a student must have taken at least two quarters of Greek or Latin or at least three quarters of classics courses and maintain a minimum 3.0 grade point average.

Kappa Delta Pi

Kappa Delta Pi, an international honor society in education, was founded March 8, 1911, at the University of Illinois. The Santa Clara chapter was established in February 1996. Organized to recognize excellence in education, Kappa Delta Pi elects to membership those who exhibit the ideals of scholarship, high personal standards, and promise in teaching and allied professions. To be eligible for membership, students must have completed five quarters of college work, have at least 18 quarter hours of professional education courses programmed, rank in the upper quintile of their class, and have a cumulative GPA of 3.25 or better.

Phi Alpha Theta

Phi Alpha Theta, the international honor society in history, was founded in 1921 at the University of Arkansas. There are now more than 475 chapters in 49 states, Puerto Rico, Canada, and the Philippines. The Lamda Upsilon chapter, established at Santa Clara University in 1966, is active in student and educational programs. Members are selected on the basis of excellence in the study and writing of history.

Phi Beta Kappa

Phi Beta Kappa, the oldest national honor society, was founded in 1776 in Williamsburg, Va., by students at the College of William and Mary. Its purpose is to celebrate excellence in all scholarly endeavors and to encourage educational breadth, including languages, mathematics, the sciences, and the humanities. There are now more than 230 chapters at universities throughout the country. The Pi chapter at Santa Clara University was installed in 1977. Installation of a chapter indicates that the United Chapters of Phi Beta Kappa have found a university's

curricula sufficient in breadth and scholarly quality to warrant being honored by the society. Students are selected for membership on the basis of academic excellence, intensive study in a second language and college mathematics, and breadth of course work.

Phi Sigma Iota

Phi Sigma Iota, the international foreign language honor society, was founded in 1922 at Allegheny College. The Beta Delta chapter was installed at Santa Clara University in 1982. The society recognizes remarkable ability and achievement in languages, literatures, and linguistics. It stimulates advanced work in these fields, fosters intercultural understanding, and promotes a spirit of amity between our own people and other peoples of the world. Juniors and seniors with at least four advanced-content courses completed in a qualifying language, a grade point average of 3.25 in that language, and a cumulative average of 3.0 may be eligible for membership.

Phi Sigma Tau

Phi Sigma Tau was founded at Muhlenberg College in 1930 as Alpha Kappa Alpha. In 1955, it was incorporated as Phi Sigma Tau, a national honor society in philosophy. Its essential purpose is to promote ties between philosophy departments in accredited institutions and students in philosophy nationally. Santa Clara University received its charter in 1986. To be eligible for membership, students must have completed five quarters of college work, rank in the upper one-third of their class, and have completed at least three courses in philosophy with a grade point average of 3.0 or higher.

Pi Mu Epsilon

Pi Mu Epsilon, the national honor society in mathematics, was incorporated in 1914 at Syracuse University to promote scholarly activity among college students. The California Eta chapter was founded in 1967 at Santa Clara University. Members are selected from the top fourth of their class in general college work. Upper-division students must have completed their mathematical work with honors; sophomores must have achieved a straight-A record in all mathematical courses taken.

Pi Sigma Alpha

Pi Sigma Alpha, the national political science honor society, was founded at the University of Texas in 1920. There are approximately 460 chapters and more than 100,000 members nationally. In order to qualify for membership, graduating seniors must have a minimum 3.5 GPA in political science and an overall 3.0 GPA; juniors need a 3.7 GPA in political science and an overall 3.0 GPA.

Pi Tau Sigma

Pi Tau Sigma, the mechanical engineering honorary society, was founded in 1915 at the University of Illinois. There are presently 150 chapters and 90,000 members nationwide. The Santa Clara Alpha Epsilon chapter was granted its charter in 1991. Its objectives are to foster high ideals in the engineering profession, stimulate and support departmental activities, promote professional welfare, and develop leadership and citizenship. Members are selected from the top fourth of the junior class and top third of the senior class in the Mechanical Engineering Department.

Psi Chi

Psi Chi, the national honor society in psychology, was founded in 1929 for the purpose of encouraging, stimulating, and advancing the science of psychology. Presently, there are more than 200,000 members affiliated with more than 700 chapters on college campuses. The Santa Clara chapter was established in 1991. To be eligible for membership, students must have completed 12 or more units in psychology with a grade point average of 3.0, declared a psychology major or minor, and rank in the upper third of their class.

Sigma Pi Sigma

Sigma Pi Sigma, the national physics honor society, was founded in 1921 at Davidson College, North Carolina. The society currently has more than 319 chapters and 40,000 members. The Santa Clara chapter was founded in 1969. Sigma Pi Sigma encourages a greater understanding and interest in the advanced study of physics, promotes research, and fosters the spirit of scientific inquiry. Members are selected from the upper quarter of their class and must also have a 3.25 grade point average in physics and mathematics.

Sigma Tau Delta

Sigma Tau Delta, the national English honor society, was founded in 1924 at Dakota Wesleyan University. The Santa Clara chapter, Phi Phi, was established in 1987. Sigma Tau Delta recognizes scholarly achievement in all aspects of English language and literature, including creative and critical writing. Members must be in the upper 35 percent of their class and must also have a B average in English.

Sigma Xi

Sigma Xi was founded in 1886 by a group of scientists at Cornell University to encourage original investigation in pure and applied science. The Santa Clara chapter was established in 1967. Students who have demonstrated an aptitude for original scientific research are eligible for associate membership. The requirements for full membership include noteworthy achievements in research as demonstrated by a doctoral dissertation, publications, or patents.

Tau Beta Pi

Tau Beta Pi, a national honor society for technical students, was founded in 1885 at Lehigh University. There are now more than 195 chapters with a total membership exceeding 296,000. The Santa Clara chapter was established in 1956. This organization recognizes superior scholarship and exemplary character. Members are selected from the upper fifth of the graduating class in engineering and must demonstrate personal integrity, breadth, adaptability, and unselfish activity.

Theta Alpha Kappa

Theta Alpha Kappa is the national theology and religious studies honor society for both professors and students. The society was founded in 1976 at Manhattan College. The Santa Clara chapter, Alpha Phi, was granted a charter in 1981. Its main purpose is to further the study of theology and religious studies by fostering excellence in these studies. Religious studies majors and minors with a grade point average of 3.5 and a cumulative index of 3.0 are eligible for admission to the society.

Upsilon Pi Epsilon

Upsilon Pi Epsilon is the honor society for the computing sciences. The society was founded at Texas A&M University in 1967 to promote high scholarship and original investigation in the computing sciences. The Santa Clara Lambda chapter was established in 1990. Members must be computing majors; have been in residence for at least one quarter; completed 96 units, at least 20 of which must be from computing courses; and earned a 3.3 GPA in computing courses and a cumulative grade point average of 3.35.

SCHOLARSHIPS

The University awards annual scholarships to students based on financial need and academic promise or special talents. For more information, refer to the Financial Information section of this bulletin and to the information bulletin published by Student Records and Financial Services.

UNIVERSITY AWARDS

Valedictorian Established by the University in 1980, this honor is conferred annually on a graduating senior selected for outstanding academic achievement and University service as determined by the academic vice president and the faculty of the University.

Nobili Medal Established in 1876 by Joseph A. Donohoe, in honor of John Nobili, S.J., founder of the University, this award is given to the male graduate judged outstanding in academic performance, personal character, school activities, and constructive contribution to the University by the faculty and the academic vice president.

Saint Clare Medal Established by the University in 1968 in honor of Saint Clare of Assisi, this award is given to the female graduate judged outstanding in academic performance, personal character, school activities, and constructive contribution to the University by the faculty and the academic vice president.

SPECIAL AWARDS

Community Service

Richard J. Riordan Awards Established in 1984 by Richard J. Riordan, these awards are given annually to four students judged outstanding in community service.

Ethnic Studies

Matt Meier Prize Established in 1994 in honor of Professor Matt Meier, a major contributor to the field of ethnic studies, this prize is given by the Ethnic Studies Program to the ethnic studies minor or liberal studies minor with an ethnic studies concentration who writes the best essay on an ethnic studies topic.

Forensics

Ryland Prize Established in 1897 by the Hon. Caius T. Ryland, this award (formerly Ryland-Owl Prize) is given to the winner of the annual Ryland debate. Focusing on current social and political issues, this public debate is held each spring and judged by a faculty committee.

Journalism

Handlery Prize Established in 1947 by Mrs. Rose Handlery in memory of her son Raymond of the class of 1934, this prize is awarded each year to the graduating senior who has contributed most to the success of student publications at the University.

Performing Arts

Charles Lampkin Award This annual award, established in 1989 in honor of Charles Lampkin, the late actor and University artist-in-residence, is given to the junior or senior African American student who has demonstrated excellence and commitment to performance in theatre, music, dance, or television.

Women's Studies

Mary Gordon Prize Established in 1992 in honor of Professor Mary Gordon, founder of the Women's Studies Program and its first director, this prize is awarded to the women's studies minor student who writes the best essay on a women's studies topic.

LEAVEY SCHOOL OF BUSINESS AND ADMINISTRATION AWARDS

Professor O. Robert Anderson Award Established in 1973, this award is given in memory of Prof. O. Robert Anderson, who taught accounting at the University. It is awarded annually to the accounting major judged outstanding in scholarship by the faculty of the department.

Albert F. Bruno Award Established in 1982 in memory of Albert F. Bruno by Albert V. Bruno and family, this award is conferred annually to the outstanding marketing major on demonstration of scholarship, leadership, personal character, and career potential.

Charles J. Dirksen Prize Established in 1965 by Dr. Eliot Jones in honor of Charles J. Dirksen, late dean and professor of marketing emeritus, this prize is awarded to the junior in the Leavey School of Business and Administration judged outstanding in scholarship by the faculty.

Financial Executives Award Established at Santa Clara in 1980, this award is given annually by the Financial Executives Institute to the senior, junior, and sophomore finance majors judged outstanding in scholarship and executive potential by the finance faculty and members of the institute.

Charles and Barbara Hazel Award for Excellence in Undergraduate Economics Established by Charles and Barbara Hazel, it is awarded annually to the graduating seniors who have achieved superior academic performance as economic majors.

Isabel Jones Prize Established by Dr. Eliot Jones in 1956 in memory of his wife, Isabel, this award is given to the senior in the Leavey School of Business and Administration judged most outstanding in scholarship by the business school faculty.

Operations & Management Information Systems Award Awarded to the junior major judged outstanding in scholarship and executive potential in the field of operations and management information systems.

Organizational Analysis and Management Award Granted to the major who, through high overall grade point average, has demonstrated noteworthy scholarship, strong leadership, and managerial aptitude in co-curricular activities.

Outstanding Accounting Student Award Established in 1973, this award is given annually by the San Jose Chapter of the California Society of Certified Public Accountants to the senior accounting major judged outstanding in scholarship and professional career potential by a committee of the chapter.

Wall Street Journal Student Achievement Award Established at the University by Dow Jones Corp. in 1960, this award is given to the senior finance major with the highest scholastic average.

SCHOOL OF ENGINEERING AWARDS

William J. and Marijane E. Adams Jr. Awards Established in 1990 by William J. and Marijane E. Adams Jr., one award is conferred annually to an outstanding mechanical engineering undergraduate student with financial need; and one award provides a stipend for an outstanding graduating senior in mechanical engineering to continue to graduate school at Santa Clara.

Edmund C. Flynn Memorial Awards Established in 1981 by Mrs. Edmund C. Flynn in memory of her husband, these awards are given to the graduating civil engineering student presenting the best thesis and to the two junior civil engineering students with the highest scholastic averages.

Raymond M. Galantine Award Established in 1996, this award recognizes an outstanding engineering student who has demonstrated a commitment to putting into practice the Catholic and Jesuit ideal of people in the service of others. The award honors the memory of Raymond M. Galantine '53, whose life was an example of this ideal.

Regan Memorial Award Established in 1977 in memory of Patrick W. Regan of the class of 1947, this award is given to the outstanding juniors in civil engineering as determined by the faculty of the department.

School of Engineering Humanities Award Conferred each year on an engineering student who has been nominated by members of the humanities faculty and selected by the School of Engineering for outstanding work in the humanities while maintaining a strong record in engineering.

COLLEGE OF ARTS AND SCIENCES AWARDS

Chemistry

American Chemical Society Award in Analytical Chemistry Sponsored by the American Chemical Society Division of Analytical Chemistry to honor a junior student for excellence in both lower- and upper-division analytical chemistry courses.

American Chemical Society Polyed Award Sponsored by the Polymer Education Committee of the American Chemical Society to honor outstanding achievement in the Organic Chemistry I, II, and III course sequence.

American Institute of Chemists Foundation Award Awarded to an outstanding senior chemistry major in recognition of a record of leadership, ability, character, and scholastic achievement.

CRC Freshman Chemistry Achievement Award Sponsored by the Chemical Rubber Co. to honor a freshman student for outstanding performance in the General Chemistry I and II course sequence.

Professor Joseph F. Deck Award Established in 1973, this award is given by the Chemistry Department faculty to the outstanding student majoring in chemistry who has excelled in studies and undergraduate research, extracurricular activities, leadership, and generous tutoring of fellow students, while maintaining a B average.

Communication

Communication Department Prize Established in 1985 by alumni and friends, this award is given by the Communication Department faculty to the graduating senior who best meets the goals of the department.

Justin T. McCarthy Award Established in 1976 in memory of Justin T. McCarthy, this award is given to the senior student who has excelled in oratory.

English

Academy of American Poets Prize Founded in 1994 by Victoria Verga Logan and Frank Verga Jr., in memory of Tamara Verga, this prize is given to the undergraduate who writes the best group of poems as determined by an annual competition.

Freshman Essay Prize Established in 1983, this prize is given by the English Department to honor an outstanding student essay written during English 1 (Composition and Rhetoric I).

McCann Short Story Prize Established in 1894 in honor of Daniel M. McCann, B.S. 1884, this award is given by the English Department to the author of the best short story as determined by an annual competition.

Shipsey Poetry Prize Established in 1954 by Richard W. Schmidt in honor of the late Edward Shipsey, S.J., this prize recognizes the outstanding contribution in the art of poetry as determined by an annual competition.

History

The Redwood Prize An annual prize established in 1908 by the executive committee of *The Redwood,* this award is given to the student who writes the best essay on a historical subject as determined by the History Department faculty.

Italian

San Jose Civic Club Prize Established in 1956, this award is given by the Italian faculty to the student most diligent in the study of Italian.

Language

Richard F. Rebello Phi Sigma Iota Award Established in 1986 by the family of the late Richard Rebello, longtime University staff member, these awards are given by the Modern Languages Department to junior or senior language majors for outstanding accomplishments in the study of a foreign language and culture.

Liberal Studies

Academic Achievement Award Established in 1995, this award is given to the senior liberal studies major with the highest overall grade point average at Santa Clara.

Pre-Teaching Award Established in 1995, this award is given to the senior liberal studies students judged most outstanding in scholarship and professional service who plan to go on to careers in teaching.

Mathematics

Freshman Mathematics Prize Established in 1958, this annual award is given by the faculty of the Mathematics Department to the freshman student who demonstrates excellence in mathematical study and achievement, determined by a competitive examination each spring.

George W. Evans Memorial Prizes Established in 1972 by the family and friends of the late George W. Evans II, professor of mathematics at the University, these awards are given to the male and female students placing highest in the William Lowell Putnam Mathematical Competition. A third award is given to the student judged most outstanding in mathematical writing and research by a panel of mathematics consultants.

Music

American Choral Directors Association National Choral Student Award This award is given to a student who has been involved in continued participation in choral ensembles, has provided service to the ensemble and conductor, has demonstrated a high degree of choral proficiency and music literacy, and has contributed to the advancement of choral singing at the University.

Department of Music Certificate for Distinguished Musical Performance Established in 1980 by the faculty of the Music Department, the performer's certificate is awarded to a student demonstrating exceptional accomplishment in music and excellence in musicality and technical proficiency.

Arrigo and Catherine Descalzi Prize Established in 1990 in honor of Arrigo and Catherine Descalzi, this award is presented to the senior music student who, in the judgment of the Music Department faculty, best demonstrates technical and artistic growth and dedication to the art of music.

Natural Science

Orella Prize Established in 1915 by Dr. Firim R. Orella, B.S., 1889, and funded in 1945 by his wife, Albertine S. Orella, this prize is awarded to the senior science student who attains the highest average in scientific subjects.

Philosophy

Fallon Prize Established in 1995 in memory of Timothy Fallon, S.J., by the faculty of the Philosophy Department, this award is given to the junior student demonstrating outstanding achievement in the study of philosophy.

Sourisseau Prize Established in 1956 by Eva Sourisseau in honor of her parents and family, this award is given by the Philosophy Department faculty to the senior student demonstrating outstanding achievement in the study of philosophy.

Physics

Carl H. Hayn Physics Prize Established in 1997 by William and Katherine Duffy in honor of Carl H. Hayn, S.J., longtime physics professor at Santa Clara University. The prize is awarded annually to the most outstanding student in the sequence Physics for Scientists and Engineers I, II, and III as selected by the faculty who teach the sequence.

Political Science

Michael Shallo Prize Established by the University in 1955 in honor of Michael Shallo, S.J., this award is given by the Political Science Department faculty to the student judged most proficient in political science.

Psychology

Wilhelm Wundt Award Established in 1988, this annual award is given by the Psychology Department faculty to the senior student who has excelled in scholarship, research, and service to the department.

Religious Studies

Religious Studies Prize Established in 1950 by the president of the University, this prize is given each year by the Religious Studies Department faculty to the student most proficient in religious studies.

Sociology and Anthropology

Witold Krassowski Sociology/Anthropology Awards Established in 1979 by the department, alumni, and friends in honor of Professor Witold Krassowski, the first sociologist at Santa Clara, these prizes are awarded by the faculty to the students in the department demonstrating exemplary research in sociology and anthropology.

Theatre and Dance

William H. Leahy Prize Established in 1925 in honor of William H. Leahy by his wife and his brother James, this prize is awarded to the graduating senior who has made the greatest contribution to dramatic art at Santa Clara as determined by the members of the Theatre and Dance Department.

DEPARTMENT OF MILITARY SCIENCE AWARDS

Armed Forces Communications and Electronics Award Established by the Department of the Army at Santa Clara in 1973, this annual award is given by the Military Science Department faculty to the cadet in a communications or electronics field who excels in academic achievement, demonstrated leadership potential, and meritorious contribution to the ROTC program.

Association of the U.S. Army ROTC Medal Established at Santa Clara in 1956 by the Department of the Army, this award is given by the Military Science Department faculty to the junior cadet judged most outstanding in meritorious academic attainment, exemplary conduct, efficiency, and fidelity.

George C. Marshall ROTC Award Established at Santa Clara in 1977 by the Department of the Army, this award is given by the Military Science Department faculty to the cadet judged most outstanding in military studies and leadership.

Superior Cadet Award Established by the Department of the Army at Santa Clara in 1958, these ribbons are given by the Military Science Department faculty to the cadet in each of the four years of training who consistently demonstrates potential qualities of an officer, outstanding performance of duty, and overall proficiency.

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University Religious, Social, and Cultural Life

CAMPUS MINISTRY

Campus Ministry functions as a leaven within the University community so that the Living God may be magnified in all people: students, staff, faculty, and alumni. In keeping with the Jesuit tradition of developing the person, and with the ideal that all of us be people for others, Campus Ministry seeks to facilitate growth in individuals and the community by its presence, programs, and services.

The Campus Ministry staff reflects the reality of the Church today: a team of men and women—lay, religious, and clergy—who encourage all members of this community to deepen their religious commitment in "the service of faith, of which the promotion of justice is an absolute requirement" (Decree 4, 32nd General Congregation of the Society of Jesus).

To attain this vision, Campus Ministry offers the University community a variety of programs: liturgies and other sacramental celebrations, retreats, counseling and spiritual direction, educational forums, interfaith sharing, and Bible studies. We collaborate with all segments of the community in the planning and execution of our programs.

In all of this, Campus Ministry is guided by the words of the prophet Micah: "This is what the Lord asks of you, only this: to act justly, to love tenderly, and to walk humbly with your God."

STUDENT LIFE

Santa Clara students are encouraged to participate in extracurricular activities as part of their total development. The primary educational objective in supporting student activities and organizations is to foster a community that is enriched by men and women of diverse backgrounds and wherein freedom of inquiry and expression enjoys high priority.

The following sections describe various aspects of student life and services. The *Undergraduate Student Handbook,* which may be obtained from the Office of the Dean of Students, contains more detailed information.

Student Conduct Code

As an institution of higher education rooted in the Jesuit tradition, the University is committed to creating and sustaining an environment that facilitates not only

academic development, but also the personal and spiritual development of its members. This commitment of the University encourages the greatest possible degree of freedom for individual choice and expression with the expectation that individual members of the community

- will be honest;
- will demonstrate respect for self;
- will demonstrate respect for others; and
- will demonstrate respect for the law and University policies, regulations, their administration, and the process for changing those laws, policies, and regulations.

The president of Santa Clara University has delegated general supervision for matters of student conduct to the vice provost for student affairs. Specific responsibility and authority for the University judicial system have been assigned a judicial officer. Student disciplinary cases are heard by the appropriate judicial board or by a judicial hearing officer. The judicial officer determines which course of action is taken based on the nature of the case and the guidelines for judicial boards/councils found in the *Judicial System Handbook.*

The structure of the University judicial system consists of the following:

- Peer Review Boards—resident and nonresident students with jurisdiction over matters of student conduct where the possible consequences may range up to, but not include, separation from the University.
- University Discipline Council—students, faculty, and staff hear cases of a serious nature, including cases that may result in separation from the University
- University Board of Appeals—student, faculty, and staff who hear appeals from the University Discipline Council

Final appeals from all judicial bodies or hearing officers are made to the vice provost for student affairs acting on behalf of the president. In exceptional circumstances, the vice provost for student affairs may suspend the normal structure of the University judicial system and appoint judicial hearing officers to conduct disciplinary hearings.

For a full description of the University's Student Conduct Code, judicial system, and disciplinary actions, please refer to the *Undergraduate Student Handbook.*

Student Housing

The University maintains residence halls and apartment complexes accommodating approximately 1,700 students. Each residence hall room is furnished with standard twin beds, desks, chairs, chests, and bookshelves. Residence halls have common bath facilities, and most student rooms have sinks. Most residence hall rooms are planned for double occupancy. The residence halls are coeduca-

tional by floor or wing, with students sharing lounge areas, study rooms, television and recreation rooms, kitchens, coin-operated laundry facilities, and other common services. Each student room is also networked for voice, video, and online computer connections.

Both professional and student staff live in campus housing and are committed to providing an atmosphere conducive to effective community living. The goal of the staff is to provide a living-learning environment that encourages academic achievement while assisting each individual student and the resident community in their development.

Students who wish to apply for accommodations in University housing should submit an application and contract with the required housing prepayment deposit to the Office of Housing and Residence Life. New students submitting the required contract and prepayment deposit by the designated deadline are guaranteed accommodations in University housing. Transfer students are accommodated as space permits. If a housing reservation is canceled, the prepayment deposit will be forfeited in accordance with the refund schedule. Returning upper-division residents are assigned University housing in accordance with the housing room-selection and assignment process.

Requests for applications and other correspondence regarding student housing should be addressed to the Office of Housing and Residence Life.

Athletics

The University maintains a well-balanced program of intercollegiate and recreational sports.

Intercollegiate competition for men is conducted in basketball, baseball, tennis, water polo, golf, soccer, crew, and cross-country. Intercollegiate competition for women is conducted in volleyball, basketball, softball, tennis, cross-country, soccer, crew, and golf. All of the participants in these sports compete against opponents of recognized national standing.

The University is a Division I member of the National Collegiate Athletic Association and the West Coast Conference.

Recreational sports involve participation in club sports, intramurals, and recreational and fitness activities. The club sports program offers participation in men's boxing, volleyball, rugby, men's and women's lacrosse, women's field hockey, and women's water polo. Recreational and physical activities classes are informal and instructional.

Student Government

Associated Students (ASSCU) is the official undergraduate voice of the student body. As such, its role and responsibility are to represent effectively students' needs, desires, and opinions by the active participation of student leaders in all areas of the University, including significant decisions that affect students and frequent interaction with student constituents.

Associated Students is divided into three main branches: executive, legislative, and judicial. The Executive Cabinet, comprising five student leaders, con-

stitutes the executive arm. Twenty-four elected senators make up the legislative area, and seven justices are responsible for administering and interpreting the rules and regulations governing Associated Students. The services area, another large part of the organization, oversees the operation of a student convenience store, a student rental operation, free legal consulting, and a book exchange program. ASSCU also supports clubs and class programming efforts for the enjoyment of the entire campus.

Student Media

KSCU-FM Radio KSCU-FM is managed and operated by Santa Clara students. It is designed to train students in broadcasting skills and to provide the University community with music, news, sports, and public service information.

The Santa Clara Review *The Santa Clara Review,* founded in 1869, is the University's literary magazine and the oldest college publication in the West. It invites authors from every academic area to present their works for publication. Published three times a year, the magazine includes essays, journalistic pieces, short stories, poetry, and reviews.

The Redwood Having recently published its 93rd edition, *The Redwood,* the University's student-produced yearbook, continues to record the annual story of the University. Throughout the years, *The Redwood* has earned a reputation for trendsetting and creativity in text, photography, layout, and graphic design.

The Santa Clara As the weekly campus newspaper, *The Santa Clara* reports on current events, sports, entertainment, and people. Outstanding coverage and design recently earned *The Santa Clara* an award that placed it in the top sixth of the country's university papers. All undergraduate and graduate students are welcome to join the staff of nearly 75 students who work in reporting, photography, graphic design, typesetting, advertising, and layout.

Student Organizations

Santa Clara Community Action Program The Santa Clara Community Action Program (SCCAP) is a student volunteer organization founded in 1966. The volunteer opportunities that it offers in schools, hospitals, special educational centers, and the local jail system provide experiences in education, law, medicine, psychology, religious studies, and sociology. This exposure is not only useful in making wise career decisions but also important in the sharing of moral values.

Activities Programming Board The Activities Programming Board (APB) is made up of student programmers and volunteers. All of the events are open to the entire University community: student, faculty, staff, and alumni. Programmers are responsible for producing a majority of the social and educational events, activities, and programs for the Santa Clara University campus. Offerings include noncredit courses in sign language and auto maintenance, movies, ballroom-dancing classes, horseback riding, trips to shopping outlets, concerts, comedy

shows, and well-known speakers, as well as tickets to symphony concerts, the opera, and area musicals. APB also programs such traditional events as homecoming, Bronco Blowout, and the Sadie Hawkins boat dance.

Multicultural Center Program Board The Multicultural Center Program Board sponsors events and activities that promote diversity on the campus and reflect the University's commitment to enhancing awareness and understanding of cultural pluralism.

Greek Organizations Santa Clara University has four national fraternities (Sigma Alpha Epsilon, Sigma Pi, Theta Chi, and Pi Kappa Alpha); three national sororities (Alpha Phi, Delta Gamma, and Delta Zeta); and Order of Omega, a national honorary society for outstanding fraternity and sorority members. The InterGreek Council (IGC) serves as the governing body for the Santa Clara University Greek community. IGC coordinates educational programming, all-Greek community outreach programs, and promotes the Greek experience at SCU. IGC also coordinates new member selection, which is held during winter quarter.

Debate Santa Clara has traditionally had one of the strongest intercollegiate debate teams in the western United States. The team participates in approximately 10 tournaments annually, including several out-of-state invitationals. The program is open to participation by all students, and some scholarships are available to those with previous experience in national contests. For information regarding these scholarships, contact the Financial Aid Office.

Honor Societies Santa Clara University honor societies are listed on Pages 312–16.

Student Clubs

Students can become involved in a number of the more than 80 academic, recreational, religious, social, ethnic, and political organizations active on campus. The Associated Students of Santa Clara University (ASSCU) registers undergraduate student groups on behalf of the University. For more information, contact ASSCU in 1 Benson Memorial Center.

STUDENT RESOURCES AND SERVICES

Listed below are the many service centers established to meet the needs of students. Each center provides a variety of programs to encourage personal growth.

Career Services

Career Services provides a variety of services to assist students in clarifying, planning, and achieving their career goals.

A professional staff of counselors regularly offers workshops on career planning, which include self-assessment, resume writing, interviewing, and job search strategies. Programs have been developed that bring professionals from

various fields to present information about career opportunities. A special program of informational interviewing links students with alumni in a variety of fields.

Career Services maintains strong contacts with employers. Information on internships and cooperative education is available, as well as listings of full-time, part-time, summer, temporary, and work-study jobs. All listings are available 22 hours a day on a telephone hotline. More than 200 local, national, and international employers recruit on campus to fill employment needs. Career fairs also attract many employers to the campus. The center maintains an extensive file with names of contacts at employer organizations.

Counseling Center

The Counseling Center, located on the second floor of Benson Memorial Center, offers free professional counseling to all undergraduate and graduate students. Confidential psychological counseling in a supportive atmosphere is designed to help students develop greater self-understanding and become more personally effective. Some of the concerns that students discuss with counselors include stress, depression, sexuality, individual identity and family, friendship, and love relationships. The special issues of minority and international students are recognized. In addition to individual, couples, and family counseling, the center frequently offers small groups and workshops on topics of general interest. Consultation and referral for faculty, staff, and alumni and training opportunities for graduate students in counseling are also available.

Students in crisis or with urgent needs can be seen immediately on a walk-in basis. Regular appointments are made through the receptionist, and clients can be seen within one week by calling 408-554-4172. Counseling hours are Monday through Friday, 8 a.m. to 5 p.m., and some evenings by appointment.

Center for Student Leadership

The Center for Student Leadership was established to provide a resource to enhance leadership development opportunities for students. The center directly supports the goals of the University, particularly the goal to educate leaders of competence, conscience, and compassion.

The Center for Student Leadership is located in the basement of Benson Memorial Center and assists students in maximizing their educational, cultural, social, and service opportunities outside the classroom. The center staff advise Associated Students of Santa Clara University (ASSCU), Santa Clara Community Action Program (SCCAP), Multicultural Center Program Board, Activities Programming Board (APB), InterGreek Council (IGC), the student media, clubs and organizations, and fraternities and sororities. Students interested in joining a student organization or forming a new club or organization are encouraged to come by the Center for Student Leadership for more information.

Student Health Services

Student Health Services are located in the Cowell Center on campus. Students may see the Student Health Services medical staff by appointment or for drop-in services while the University is in session. Students may call the Health Center (408-554-4501) for a schedule of hours.

All full-time undergraduates and all full-time law students are required to pay an annual fee of $184. This fee makes them eligible for all of the services at Cowell Health Center. Any students who choose SCU-sponsored health insurance must also pay the health fee and therefore become eligible for services at the center. Other students, including graduate students, may pay the $184 annual fee and use the center. Health insurance coverage for outside care or other special needs is available and required for all international and full-time undergraduate students. University health insurance charges may be waived upon proof of outside coverage received in writing delivered to the insurance coordinator at the center by the appropriate waiver date.

All students eligible for and those who elect to pay for Student Health Services are required to have a pre-entrance health examination. Additional information about health insurance coverage and pre-entrance examinations may be obtained from Student Health Services.

Student Resource Center

The main focus of the Student Resource Center is to provide academic support programs and services to students, faculty, and other student services departments. The Student Resource Center (SRC) builds bridges to connect students of targeted populations to University resources in order to ensure academic success and full participation in the community of scholars at Santa Clara. The center also coordinates conflict mediation activities for the Division of Student Development. Resource areas within the center include:

African American Student Resources
Asian Pacific American Student Resources
Chicano Latino Student Resources
Disabled Student Resources
International Student Resources
Native American Student Resources
Off-Campus Student Resources
Re-entry Student Resources
Women Student Resources

Services and activities supported by the Student Resource Center include

- enhancing students' academic success and social involvement and progress;
- assisting students in effectively setting goals and expressing their needs and concerns;
- creating opportunities for students' personal and professional growth, responsibility for actions, and motivation and leadership development;

- providing opportunities for learning about the values and beliefs of one's own group and of other groups;
- providing necessary academic support services and accommodations for students with disabilities; and
- providing consultation to the University community regarding diversity and multicultural issues.

Learning Center

The Learning Center, located in Orradre Library, offers a variety of programs to help students improve their learning skills and prepare for further education.

Two tutorial programs provide undergraduate students with assistance in many classes. Through the Individual Tutorial Program, students may arrange for personal tutoring. Drop-in tutoring is also available at different campus locations. Training in study skills takes place through workshops or in individual sessions at the center. Students receive help with time management, reading, and note taking and learn how to prepare for and improve performance on exams.

The center, by providing learning assistance in a supportive and encouraging environment, is especially useful to international graduate students who require special help in English.

The center also assists juniors, seniors, and graduate students planning to pursue graduate or professional studies select a school and secure financial aid. The center maintains a drop-in library of more than 800 graduate school catalogs and reference sources and arranges campus interviews with graduate school representatives from California and out-of-state schools. Each year the center sponsors a combined Graduate/Career Information Day with Career Services.

For national and international competitions for scholarships in which candidates must be officially nominated or endorsed by the University, the associate director, together with several members of the faculty, selects the nominees and arranges the endorsements. This office does not award fellowships, scholarships, or other financial assistance for study at Santa Clara or elsewhere.

The center also offers support for faculty through professional development programs such as workshops on teaching and learning and confidential individual evaluations of teaching.

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Facilities

ADOBE LODGE

Adobe Lodge is the oldest building on campus. Restored in 1981 to its 1822 decor, the lodge contains a presidential dining room as well as central and private dining facilities for faculty and staff.

BENSON MEMORIAL CENTER

The Robert F. Benson Memorial Center is the hub of campus life. The Benson Center is designed to meet the various needs of students, faculty, staff, alumni, and guests and to provide an environment for the education of the whole person that continues outside the classroom. Among the many services and facilities available are the Information Desk; Game Room; Brass Rail Cafe; Market Square; Mission Bakery and Terrace Cafe; California Fresh Salad Bar and Grill; Shapell Lounge; Down Under, a student-operated convenience grocery store; meeting rooms; Mission City Federal Credit Union; the bookstore; and post office. In addition, the office of Campus Ministry, a number of student services, and offices of undergraduate student government and various student organizations are housed in the center.

CLASSROOM BUILDINGS

Nine classroom buildings house not only some 72 classrooms but also numerous administrative offices. Mayer Theatre and three Fine Arts buildings provide special classroom, rehearsal, and performance facilities.

COMPUTING FACILITIES

Santa Clara provides mainframe and personal computing facilities to support educational programs. Free noncredit short courses for both types of computers are offered periodically. Computer labs are typically open from 8 a.m. to midnight Monday through Friday, with hours slightly reduced on weekends.

The principal academic mainframe system is an AlphaServer/275 running under the VMS operating system. The system operates 24 hours per day, and students have access from three public laboratories and through 30 dial-up ports.

PCs are concentrated in two general-purpose laboratories containing 150 IBM machines and various software packages for word processing, spreadsheet and database applications, and programming. Each PC can also function as a termi-

nal to the VAX. An additional 60 machines are contained in the Business School PC Classroom, Engineering PC CAD Lab, and in three smaller clusters serving the Chemistry, Mathematics, and Physics departments.

All registered students may use the PC labs and the central VAX without additional charge. More than 80 percent of the full-time faculty have a personal computer or workstation in their office, and computer use is a common element in all disciplines.

The School of Engineering Design Center has a network of more than 70 Hewlett-Packard 9000 high-end workstations and X-terminals grouped into two large classrooms and one smaller workroom. Advanced color printing and plotting capability are available throughout the Design Center. All workstations run HP's UNIX operating system and are fully networked with Internet and World Wide Web access. All systems have large, high-resolution color monitors and can utilize over 25 major commercial software packages. Software includes computer-aided design (CAD) and analysis applications for civil, computer, electrical, and mechanical engineering, as well as a variety of programming languages. The Design Center also offers a cluster of PCs and Macintosh computers for engineering student usage. The Design Center is open and available for students some 115 hours per week during the academic year.

COWELL HEALTH CENTER

Cowell Health Center offers health services to students (see Page 330). The Cowell Center also houses the Public Safety Office and the University Human Resources Department.

DE SAISSET MUSEUM

The de Saisset Museum includes American, European, African, and Oriental art, as well as historically important objects from the early days of Mission Santa Clara. In addition to its permanent collection, it features special exhibitions of traditional, modern, and contemporary art.

Museum hours are Tuesday through Sunday, 11 a.m. to 4 p.m.; closed Mondays and holidays.

KIDS ON CAMPUS

Kids on Campus is the University child-care and preschool center for children of students, faculty, and staff members. The center is a cooperative under the supervision of a volunteer committee of parents with a small staff of paid employees and parent and student volunteers. It is also used occasionally for practicum experiences by students in psychology and education courses. The preschoolers benefit from a carefully developed program designed to meet their interests and to prepare them for kindergarten. Students are encouraged to visit the Kids on Campus facilities on the east side of the campus. Because space is limited, it is recommended that applicants sign up on the waiting list as soon as possible.

LEAVEY ACTIVITIES CENTER

Constructed in 1975, this unique air-supported dome is a popular multiuse facility that encompasses a variety of intercollegiate activities, recreational programs, intramurals, and events.

Included within the two acres of Leavey Activities Center are staff offices; the intercollegiate ticket office; basketball and volleyball courts; weight room, pool, sauna, steam room, and a cardiovascular area including Lifecycles, StairMasters, rowing machines, treadmill, NordicTrack, and Versaclimber.

Also located within Leavey Activities Center is Toso Pavilion, which includes a 5,000-seat arena for intercollegiate men's and women's basketball games and women's volleyball matches.

A monthly schedule of hours and activities is posted on the Leavey bulletin board, or you can call the Leavey Center information line at 554-5450. Students, faculty, and staff must present a validated ID card to the attendant upon entering.

LOUIS B. MAYER THEATRE

The 500-seat Louis B. Mayer Theatre is designed to provide the traditional proscenium stage common to most theatres, as well as an orchestra pit and thrust elevators that can be raised or lowered electrically. In a remarkably simple procedure, a wall is moved, a few seats are relocated, and the main theatre is reoriented to a new dramatic form that extends the stage into the auditorium so that the audience surrounds the action on three sides.

Mayer Theatre also has a special floor constructed for dance, as well as a large movie screen and film projector.

The Fess Parker Studio Theatre, housed within the Mayer Theatre complex, has no fixed stage or seating. Its black-box design, complete with movable catwalks, provides superb flexibility in an experimental setting.

MISSION SANTA CLARA

Mission Church marks the historic heart of the University. Adjacent to the beautiful Mission Gardens, the Church holds regular liturgical and sacramental services and provides an open place for quiet reflection and prayer.

NOBILI HALL

Nobili Hall provides on-campus housing for the University's Jesuit community. The four-story facility, named for John Nobili, first president of the college, contains a dining area and a chapel.

MICHEL ORRADRE LIBRARY

The collections and services of the Michel Orradre Library are designed to support the University's undergraduate and graduate academic programs.

Orradre Library's collection, which dates from the founding of Mission Santa Clara, now contains more than 626,000 volumes and nearly 633,000 microforms. The library currently receives approximately 4,800 serial subscriptions and is a depository for U.S. and California government documents, which number almost 538,000 publications. In addition, the library provides access to many other information resources through the World Wide Web and other electronic services. OSCAR, the library's online catalog, is available in the library or via the campus network.

Staff at the reference and documents desks provide research advice and assist students in using the library's collections and services. Orradre's Home Page (http://www.scu.edu/SCU/Library/Orradre) provides basic information about the library's services and schedules for classes and exhibits; helpful printed guides and publications are also available in the library. Bronco Express, the library's interlibrary loan/document delivery service, is designed to quickly supply books and articles not owned by Santa Clara University. Requests for this service may be place electronically, using OSCAR.

Other services include the Learning Center, the University Archives, a computer lab, photocopy machines, open reading areas, small group study rooms, and a number of individual study carrels.

During the academic year, the library is open seven days a week for a total of 106 hours. Most books may be checked out to undergraduates for 21 days and to graduate students for 42 days, but loan periods for heavily used materials on course reserve are limited to two hours or one, three, or seven days.

RICARD MEMORIAL OBSERVATORY

Named after Jerome S. Ricard, S.J., Santa Clara's Padre of the Rains who was most famous for his sunspot theory of weather forecasting, the observatory now houses all of the University's audiovisual equipment and Media Services. Media Services offers downlink capabilities affording the University community the opportunity to participate in satellite broadcasts and teleconferences.

BUCK SHAW STADIUM

Originally built in 1962 for Santa Clara's varsity football and baseball programs, the 6,400-seat stadium is now home to the highly successful men's and women's soccer programs as well as baseball. The surrounding practice fields are the outdoor facilities for the remainder of Santa Clara's intercollegiate and intramural athletic programs.

STUDENT HOUSING

The student residence halls, described on Pages 325–26, offer students a variety of choices in University housing. Facilities include study and recreational areas in addition to student sleeping rooms and service areas.

Accreditations and Memberships

ONE HUNDRED AND FORTY-SEVENTH YEAR
1997–98

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Accredited by the American Assembly of Collegiate Schools of Business (Undergraduate and Graduate Programs)

Accredited by the American Bar Association

Admitted to Membership in the Association of American Law Schools

Accredited by the State Bar of California

Accredited by the Accreditation Board for Engineering and Technology (Undergraduate Civil, Computer, Electrical, and Mechanical Engineering)

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Accredited by the American Chemical Society

Accredited by the American Association of Museums

Admitted to Membership in the National Association of Schools of Music

Admitted to Membership in the National Association of Schools of Theatre

Member of the American Council on Education

Member of the Council of Graduate Schools in the United States

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